Policy

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STATEMENT

THE CITY OF MEDICINE HAT (THE CITY) IS A MUNICIPALITY THAT PROVIDES MUNICIPAL SERVICES AND ENERGY SERVICES, DUE TO ITS OWNERSHIP OF ENERGY PRODUCTION ASSETS AND UTILITIES. EACH BUSINESS UNIT OF THE CITY MAY NEED TO CONSIDER CERTAIN HEDGING ACTIVITIES TO HELP MANAGE RISKS TIED TO THE OPERATIONS OF THAT BUSINESS UNIT AS IDENTIFIED IN SECTION 2.01. THE CITY HAS DEVELOPED A SET OF GUIDELINES THAT MUST BE FOLLOWED BEFORE ANY HEDGING ACTIVITIES MAY BE CONTEMPLATED BY ITS BUSINESS UNITS.

HEDGE POLICY GUIDELINES PROVIDE A FRAMEWORK FOR ESTABLISHING A RISK MANAGEMENT CULTURE AT THE CITY. THE HEDGE PROGRAMS FOR RESPECTIVE BUSINESS UNITS WILL BE DEVELOPED TO ADHERE TO THE PROCEDURES ARTICULATED IN THIS DOCUMENT. THE HEDGE PROGRAMS WILL SPECIFY: A SET OF RULES TO GUIDE DECISIONS TO HEDGE THE PURCHASE OR SALE OF INVESTMENTS OR COMMODITIES ASSOCIATED IN BUSINESS OPERATIONS IN THE FORWARD MARKETS, A CLEAR STATEMENT OF ROLES AND RESPONSIBILITIES WITHIN THE CITY AND THE GIVEN BUSINESS UNIT, AND A PROCESS FOR ESTABLISHING AND MANAGING HEDGE PROGRAMS.

PRINCIPLES

1. The respective business unit hedge programs will:

   - Focus on stabilizing the cost of commodities and/or stabilizing revenues where appropriate and applicable.
   - Strive to maintain reliable supplies for operations/sales where applicable.
   - Work to mitigate the financial risk exposure to the City.

- Establish hedge programs through a documented plan for the City to execute, control and report on the ongoing hedging operation.
- Provide specific controls (e.g., segregation of duties, oversight, reporting etc.) for the management of operational risks.

The City's hedging programs will be designed for the specific requirements and constraints of Medicine Hat. Any business unit hedge program will specifically address the management of investment or commodity portfolio risk and provide a framework to maintain proper controls over portfolio activities as they change over time. The results of the hedge programs must be continually evaluated in relationship to the City's objectives to ensure effective performance.

ROLE OF COUNCIL

To receive, review and adopt this policy and any recommended amendments thereto.

City Council will attend hedge education workshops on an as needed basis. The City Council members will keep informed on the status of hedge strategy and hedging programs through annual reporting or more frequently as deemed necessary and outlined in the hedge programs.

1.01 <u>The Administrative Committee/Risk Oversite Committee</u>

The City's Administrative Committee will serve as the Risk Oversight Committee (ROC) to oversee hedge activity for any City business unit engaged in hedging. The City's Administrative Organization Bylaw formalizes the structure and authority of the Administrative Committee.

<u>ROC Responsibilities:</u>

The ROC will have the responsibility for approving administrative procedures related to this policy and each business unit hedge program and related risk management efforts for NGPR, Electric and Treasury. The ROC will provide approvals and oversight to any City business unit concerning commodity strategy, transacting, reporting, and related internal controls.

- Establish hedge programs that govern commodity hedging activities of the City and see that risk control processes are adequate to ensure compliance with such programs and plans.
- Set an Operating Group for ongoing hedge program implementation and compliance for each business unit engaged in hedging.
- Approve hedge methodology parameters and limits in terms of volume, tool type, price and time for any City business unit's hedging strategies.
- Approve hedging programs in duration not exceeding 3 years.
- Approve any new commodity trading products not currently authorized presented by the Operating Group.
- Set the required reporting framework within the existing quarterly reporting review.
- Recommend amendments to this hedge policy for consideration by City Council as necessary.

- Approve amendments to hedge programs and controls as requested by the Operating Group.
- Ensure adequate credit authority and oversight is in place related to the administration of the hedge program.
- Attend hedge education workshops on an as needed basis.
- Review as part of the quarterly management reporting package within established City business unit hedge strategy parameters.
- Maintain minutes of meetings.
- Provide as part of the annual year end reporting package to Council a summary of the hedging program accomplishments for the past year and setting of goals for the upcoming year.

1. DEFINITIONS

1.01 Assignment - the process by which the seller of an option is notified of a buyer's intention to exercise the rights associated with the option.

1.02 At-the-Money - an option whose exercise, or strike, price is identical to the underlying fixed forward contract price.

1.03 Basis - the differential that exists at any time between the forward price for a given commodity and the comparable spot price for the commodity. Basis can reflect different time periods, product qualities, or locations.

1.04 Basis Risk - the uncertainty as to whether the settled and forward price for a position will converge at the time that hedge position expires.

1.05 Bid/Ask- a measure of market liquidity. The bid is the price level at which buyers are willing to buy and the ask (also known as an offer) is the price level at which sellers are willing to sell.

1.06 Call Option - an option that gives the buyer the right (but not the obligation) to buy a forward fixed contract at a predetermined strike price for a one-time premium payment, and obligates the seller to sell at that price, should the option be exercised.

1.07 Cap - a contract between a buyer and seller in which the buyer is assured he or she will not have to pay more than a maximum price. (This type of contract is analogous to a call option.)

1.08 CME - (Chicago Mercantile Exchange & Chicago Board of Trade) is an American financial market company operating the world's largest options and futures exchange. It owns and operates large derivatives and futures exchanges in Chicago, New York City, and exchange facilities in London, using online trading platforms.

1.09 Collar - an options strategy designed to minimize upfront costs of a cap or floor purchase through the sale of a cap or floor.

1.10 Counter Party - the person or institution standing on the opposite side of a transaction.

1.11 Credit Risk - the risk of default by either counterparty in a transaction.

1.12 Exchange - an exchange is a marketplace in which securities, commodities, derivatives and other financial instruments are traded.

1.13 Exercise - the process of converting an options contract into a fixed forward position.

1.14 Exercise Price - the price at which the underlying fixed forward contract will be bought or sold in the event an option is exercised. (Also called the strike price.)

1.15 Floor - a supply contract between a buyer and seller of a commodity, whereby the seller is assured that he will receive at least some minimum price. (This type of contract is analogous to a put option.)

1.16 Forward - a standardized contract for the purchase or sale of a commodity which is traded for future delivery not under the provisions of an established exchange.

1.17 Futures Contract - a standardized, binding agreement to sell a specified quantity or grade of commodity, traded on an organized exchange at a fixed price but to be delivered and paid for on a later date. Futures contracts are freely transferable and are settled daily based on their current value in the marketplace.

1.18 Hedging - a form of financial protection in the forward markets to reduce the risk of adverse price moves for an underlying asset. (Hedging is the opposite of Speculation.)

1.19 ICE - Inter Continental Exchange, provides exchange trading and clearing services in a number of different markets. Its main products include: Exchange-traded futures and options.

1.20 In-the-Money - an option is in-the-money if the underlying fixed forward contract price is above a call option's strike price, or below a put option's strike price.

1.21 Mark-to-Market- a daily calculation for a given fixed forward or options contract position by valuing the gain or loss in each contract resulting from changes in the price of the fixed forward or options contracts to the most recent settled market price.

1.22 NGPR – Natural Gas and Petroleum Resources. The previous name for the Gas Production unit.

1.23 NYMEX - The New York Mercantile Exchange (NYMEX) is a commodity futures exchange owned and operated by CME Group of Chicago. NYMEX is located at One North End Avenue in Brookfield Place in the Battery Park City section of Manhattan, New York City.

1.24 Option - a contract which gives the holder the right, but not the obligation, to purchase or to sell the underlying fixed forward contract at a specified price within a specified period of time in exchange for a one-time premium payment. The contract also obligates the writer, who receives the premium, to meet these obligations.

1.25 Option Premium - the price or cost of an option collected by the seller. The components of an option premium include its intrinsic value, its time value and the implied volatility of the underlying fixed forward position. As the option nears its expiration date, the time value will edge closer and closer to $0, while the intrinsic value will closely represent the difference between the underlying fixed forward price and the strike price of the contract.

1.26 Out-of-the-money - an option which has no intrinsic value. (For calls, an option with exercise price above the market price of the underlying fixed forward contract. For puts, an option with an exercise price below the underlying fixed forward contract price).

1.27 OTC (Over-the-Counter) - the purchase and sale of forward instruments not conducted on an organized exchange.

1.28 Put Option - An option that gives the buyers the right (but not the obligation) to sell an underlying fixed forward position at a predetermined strike price and obligates the seller to buy at the strike price, should the option be exercised.

1.29 Quarterly Management Report - references the City's management reporting package prepared and presented to Audit Committee and City Council. Current reporting timeframes are three times annually for the operating periods January to April; May to August; and September to December.

1.30 Speculation - The opposite of hedging in which in which the speculator holds no offsetting underlying asset position and deliberately incurs price risk in order to reap potential rewards.

1.31 Strike Price - the price at which the underlying fixed forward contract is bought or sold in the event an option is exercised. (Also called an exercise price.)

1.32 Strip - the simultaneous purchase (or sale) affixed forward positions in consecutive months. The average of the prices for the fixed forward contracts bought (or sold) is the price level of the hedge. A 12-month strip, for example consists of an equal number of fixed forward contracts for each of 12 consecutive contract months. (Also known as a calendar strip.)

1.33 Swap - a custom-tailored, individually negotiated transaction designed to manage financial risk. Swaps can be conducted directly by two counterparties, or through a third party such as a bank or brokerage house. The writer of the swap, such as a bank or brokerage house, may elect to assume the risk itself, or manage its own market exposure on an exchange. Swap transactions include interest rate swaps, currency swaps, and price swaps for commodities, including energy. In a typical commodity or price swap, parties exchange payments based on changes in the price of a commodity or a market index, while fixing the price they effectively pay for the physical commodity. The transaction enables each party to manage exposure to commodity prices or index values. Settlements are usually made in cash.

1.34 Unsecured Debt (Credit) - a debt obligation which is not backed up by an underlying asset or was extended without collateral requirement.

1.35 Volatility - the market's price range and movement within that range. Historic volatility indicates how much prices have changed in the past and is derived by using daily settlement prices for forward contracts. Implied volatility measures how much the market thinks prices will change in the future and is obtained from daily settlement prices for options.

2. RISK MANAGEMENT PHILOSOPHY

2.01 Identified Risk

The City business unit that chooses to initiate a hedge program will list and define the risks that its respective business units are exposed to and needs to manage. Examples of such risk are the following:

- Market price risk - the risk of variance in actual vs planned costs due to commodity price changes.
- Credit/performance risk - the risk of loss due to default or failure by counterparties to perform on contracts.
- Cash-flow risk - the risk of not having enough cash on hand to meet financial obligations.
- Foreign-exchange risk - the risk of an investment's value changing due to fluctuations in currency exchange rates.
- Volumetric risk- the risk of loss due to unpredictable variations in the plant demand.
- Operational (Commercial) risk-the risk of loss due to flawed or inadequate business processes.
- Regulatory risk - in managing price risk, regulatory risk could arise that may also need to be considered. That risk could entail risk of fines, penalties and compliance costs due to changes and clarifications in rules and regulations.

Business unit hedge programs drafted will be designed to address any identified risks.

2.02 Business Objectives

Each business unit will list the objectives of its hedging activities in a hedge program document and all hedging activities will be specifically designed to achieve those stated objectives and will be approved by the Risk Oversight Committee and reported to City Council annually.

The City has several objectives in designing hedging programs for the corporation and they are:

- Help mitigate the City's exposure to commodity price volatility and diversify Energy Marketing and Treasury efforts.

- Enhance stability in revenue by hedging commodity prices on a portion of Gas Production/Electric Generation and hedging a portion of risk inherent in foreign exchange and interest rates for Treasury.

The objectives are an important part of the hedge process, and the success of the program is largely dependent on these objectives being achieved.

City hedge programs will formalize the process and the delegation of authority for investment, commodity price and credit risk management to create the structure for objective achievement. The specific operating processes and procedures that support the development of such programs should include where appropriate:

- Establishing guidelines for managing risk of commodity purchases and sales.

- Establishing guidelines for managing cash reserve risk.

- Establishing internal controls and approval procedures.

- Defining appropriate internal reporting for management oversight purposes and external reporting for compliance with existing accounting standards.

- Establishing limitations on transacting and hedging activities and instruments.

- Providing a process for the approval of new products or transactions.

2.03 Risk Tolerance

After evaluating and stating objectives for a hedge program, a City business unit should consider and outline its risk tolerance in terms of minimizing unfavorable variance to its operating budget and cash reserves. To accomplish this, any City business unit's hedge program will define at a minimum the following:

- Strategy and planning requirements and acceptable limits, transaction types, term limits, volumetric limits and price uncertainty reflecting the City's low-to-moderate risk tolerance level.

- Counterparty credit risk and how to monitor ongoing credit risk.

- The prohibition of speculative trading.

3. ORGANIZATION & GOVERNANCE

Hedge policy guidelines are designed for implementation within the City's existing organization structure and by existing staff. This condition requires the integration of new responsibilities for the necessary risk management of energy and treasury-related commodity transactions.

The following sections identify and describe the levels within the organization with oversight or direct responsibility for the implementation of hedge policy guidelines and the resulting hedge program.

3.01 Operating Group

As approved by the ROC an Operating Group (OG) will be set to oversee hedge activity for any City business unit involved with hedging. While the composition of this committee will be focused primarily on staff within the particular business unit, the ROC will ensure that at least one or two members serve on all existing business unit OGs to allow for continuity between the committees.

The OG will have the responsibility for leading and managing business unit commodity risk management implementation efforts. The OG will provide direction to the business unit concerning commodity hedge strategy, transacting, and reporting.

a) Structure

Membership:

The OG will be comprised of constant members and advisory members. Additionally, a Committee Chair will be designated by the City Manager. The advisory members will be utilized as necessary to keep the ROC up to date on hedging activity and hedge program compliance monitoring. A broad representation of expertise and major stakeholders within the City and the business unit will comprise this committee. Each individual business unit Hedge Program will list the members of that given OG.

b) Meeting Frequency and Procedures

The OG will schedule to meet at least quarterly to oversee hedge program operations. Member attendance will be recorded in the OG meeting minutes. Any member of the OG can request an emergency meeting of the OG to address circumstances or issues that may require immediate attention. In the event any member is unable to attend a given OG meeting in person or by telephone, that member may designate an alternate to attend in his or her absence.

The Chairperson will designate a Secretary who is responsible for documenting all meetings and actions taken by the OG in meeting notes that will be distributed to the OG members for their review. Meeting notes will be distributed by the Secretary to ROC members.

c) Responsibilities

OG responsibilities will be outlined and listed within each individual business unit Hedge Program document.

3.02 City Manager

The City Manager is responsible for the overall direction, structure, conduct, control, and reporting of hedging activities for Gas Production, Electric Generation and Treasury.

The City Manager will:

- Establish the scope of investment/commodity portfolio and hedging activities, the purpose for engaging in transactions, and the appropriate risk tolerances.
- Appoint Business Unit Operating Group Committee Chairs.
- Periodically assess the adequacy and functioning of the system of controls over market, credit, and operational risks.
- Ensure that risk tolerances are consistent with strategic direction.
- Ensure that all risk control activities (position monitoring, portfolio assessment, credit, etc.) are independent of hedge transacting.
- Periodically review the program with the ROC.
- Report to the City Council and any appropriate subcommittees annually on the risk profile of the investment/commodity portfolio and on the results of investment/hedging activities.

3.03 Business Unit Manager

On an ongoing operational basis, an individual within each business unit will be given hedge implementation tasks. Examples of the responsibilities for this position are the following:

- Develop and maintain investment/commodity budgets and sales forecasts.
- Assure daily compliance with the hedge program by staff involved in hedging activities.

- Oversee the development of hedge program and recommend investment/hedge program to the OG.
- Oversee the implementation and execution of investment/hedge program.
- Lead and assist in the preparation of required reports as deemed necessary in the given hedge program.
- Provide advice and recommendations to the OG.

3.04 Designated Traders

Each business unit will have traders designated to serve as the "Front Office" for purposes of that unit's hedging activities and these individuals will be responsible for the implementation of the hedge program within approved City Council, ROC, and OG parameters. Responsibilities for each business unit's authorized traders are outlined in that given hedge program.

3.05 Finance/Treasury

The Finance or Treasury group will typically be designated as the "Middle/Back Office" for purposes of a given Medicine Hat business unit hedging program. Responsibilities for each business unit's Middle/Back Office are outlined in that given hedge program. This group maintains responsibility for the ongoing maintenance of all Medicine Hat hedge policy and program related documents. Treasury also verifies the recommended transaction(s) fall within the Hedging Program Procedures. If the transaction(s) fall within the Hedging Program Procedures, Treasury approves the execution of the transaction(s) and verifies the final transaction confirmation. (Refer to paragraph 4 of this policy - Hedging Process).

3.06 City Solicitor

The City Solicitor will perform legal duties tied to hedging activities as appropriate.

City Solicitor tasks that may be carried out on behalf of any business unit with a hedging program may include:

- Reviewing the City's hedge policy guidelines and respective business unit hedge programs for compliance with applicable law.
- Assisting with negotiating master/enabling agreements with counterparties as directed by the given business unit.
- Assessing legal enforceability of contracts with applicable laws and regulations.
- Provide advice and recommendations to the ROC.

3.07 Internal Controls of the Hedging Process:

Key Transacting Procedures (see below chart):

To carry out hedge policy guideline provisions, key processes that maintain the internal control segregating the duties between front office transacting and middle/back office monitoring and compliance will be followed by each respective business unit in the hedge program.

Those procedures will be outlined in each individual business unit hedge program. At a minimum these processes will include how to cover contract negotiations, market monitoring and execution, transaction confirmation and capture, and bill auditing.

The following process shall be used for each hedging transaction:

Hedging Process							
	Council	ROC	Operating Group	Business Unit Manager	Front Office	Mid/Back Office	
					Designated Traders	Treasury	Finance
Internal Controls	Approve Policy	Approve Hedge Procedures and Hedging Programs (volumes, duration, instruments, triggering parameters)	Oversee hedge program execution	Approve volumes to be hedged	Research prices and instruments for given volumes Execute transaction	Ensure transaction falls within policy Verify transaction	Track value of hedge, initiate invoices / payment and reports on transaction

To ensure proper segregation of duties, at no time should the individual(s) executing the transactions be the same as those approving the transactions or reporting on the transactions.

3.08 Conflict of Interest and Compliance:

All business unit hedging programs will require that City employees holding positions mentioned in the respective programs will not enter into, or direct others to enter into, any hedge-related transactions other than on behalf of the City or its authorized agents.

Additionally, all business unit hedging programs will require City employees tied to that given hedge program will at all times adhere to the provisions documented. Each business unit hedge program will require employees involved in the program to acknowledge annually in writing (see Appendix A - Acknowledgement of Hedge Program Guidelines for an example) that he or she has read the referenced documents and that he or she will operate within full compliance. The Middle/Back Office will be responsible for administering and collecting these documents.

4. MARKET RISK AUTHORIZATIONS AND LIMITS

Within each business unit hedging program, market risk authorizations and limits will be set by the ROC to govern hedge transacting strategy and activity.

4.01 Forward Hedging/Procurement Methodologies and Strategies

Under the direction of the ROC, each respective business unit hedging program will outline responsibilities for hedge strategy development within that business unit. Such program will be constructed to manage the identified risks of that unit.

These programs will be included as an appendix to the policy procedures and updated as necessary.

4.02 Commodity Markets/Products

With the intention of optimizing set policy guidelines, each business unit's hedging program will outline authorized commodity markets/products appropriate to its operational and business needs.

Authorized commodities as appropriate will be laid out within each business unit hedging program.

4.03 Authorized Transaction Types

Authorized instruments as appropriate will be laid out within each business unit hedging program.

4.04 New Products and Transaction Types

A new product is an instrument or participation in a commodity market that is sufficiently different from the instruments and markets previously approved. The purpose of defining a process for the introduction of a new product or instrument is to ensure that the exposures associated with it are thoroughly reviewed and understood by the City's management. The ROC will approve the use of all new products for the entry into different commodity markets before execution of any such transaction. Any new products will be added to the lists in Sections 4.02 and 4.03, above.

4.05 Transaction Limits

A vital control element in the management of hedging activity is the development of and adherence to transaction limits. Limits ensure that hedging execution is appropriate and controlled at various levels of position aggregation and duration of transactions. Limits within each business unit will be established in consideration of overall portfolio strategies, market conditions, and risk tolerance levels.
Limits within each business unit hedge program will be recommended by the OG and approved by the ROC prior to implementation.

a) Authorized Personnel

The ROC will identify hedge execution authority to staff titles responsible for executing approved hedge program strategies within approved parameters. This list will be included in the hedge program document and be updated as deemed necessary.

b) Volume

The ROC will set acceptable volume limits for transacting for that given business unit in the hedge program. Identified volumes will be outlined in the business unit hedging program.

c) Time Horizon

The ROC will set acceptable durational limits for hedge transacting. The identified horizons will be included as part of the business unit's hedging program.

4.06 Changing Limits

Limits depend on evolving business needs and/or the City's expressed risk tolerance. Limits may be adjusted, upward, through approval by the ROC. Staff members handling the City's hedge execution within each business unit will be given the responsibility for maintaining all limits.

The Middle/Back Office assigned in each business unit will be given the task of monitoring the effectiveness of limits to control transaction activities and propose changes in limits as market conditions or operating circumstances warrant to the ROC.

5. CREDIT RISK MANAGEMENT POLICY

For each business unit hedge program, the City will ensure credit approved parameters are in place to govern hedge transacting. Credit risk is defined and credit approved parameters are outlined in Appendix D of the Hedging Procedures. Appendix D presents the credit risk management parameters to be used when transacting with counterparty organizations to which the City has credit exposure. Appendix D outlines the credit risk and foreign exchange risk evaluation process and methodology.

6. REPORTING

Set management reporting will act as a formal means of communicating the performance of hedge transacting. On an ongoing basis, guidelines for management and staff communications among parties with responsibilities relative to this policy guidelines document should be set for each business unit. These reports will be incorporated into the existing Medicine Hat City Council triannual reporting structure.

In the hedge program documents, each respective business unit will outline and generate reports required to communicate the market and credit risks addressed and to provide information to evaluate the portfolio performance and the effectiveness of the hedge program.

7. PROGRAM PROCEDURES REVIEW

There will be a periodic review of the hedge program procedures for each business unit. Any changes will be provided to the OG for review and recommended updates as appropriate. Examples of events prompting program updates and reviews are changes in strategic direction, regulatory requirements, significant changes in commodity prices or credit exposure, or changes in hedging instruments available. Any changes to the hedge program procedures must be submitted to the ROC for approval.

8. APPENDICES

Appendix A - Acknowledgement of Hedge Program Procedures
Appendix B - Natural Gas Hedge Program
Appendix C - Electric Hedge Program
Appendix D - Hedging Credit Risk Management
Appendix E - Foreign Exchange Management Program

APPENDIX A

ACKNOWLEDGEMENT OF HEDGE PROGRAM PROCEDURES

Compliance Statement

I, the undersigned employee hereby acknowledge receipt and review of the CITY's Hedge Program dated __________________ (the "Program").

I further acknowledge that this Program defines the standards of the CITY's hedging efforts that I am expected to comply with.

If I become aware of non-compliance with the Program I will report such non-compliance to any member of the ROC.

____
Signature

____
Type or Print Name

____
Title

____
Date

APPENDIX B

NATURAL GAS HEDGE PROGRAM

1. Natural Gas HEDGE PROGRAM OBJECTIVES

As an energy producer, the Gas Production unit with the City is exposed to and needs to manage a variety of risks including the risks identified in Section 2101 of the Corporate Hedge Policy General Guidelines. This program document is designed to address those identified risks and is focused on furthering the objectives as listed in Section 2.02 of the Corporate Hedging Policy General Guidelines document. Those additional objectives that are specific to Gas Production are:

- Help mitigate the utility's exposure to commodity price volatility and diversify energy marketing efforts
- Enhance stability in revenue by hedging the commodity price on a portion of production

1.01 Organization & Governance

As noted in Section 3 of the Corporate Hedging Policy General Guidelines, hedge programs for Medicine Hat are designed for implementation within the City's existing organization structure and by existing staff. The Natural Gas Hedge program will follow the similar governance protocol as listed in the corporate document. City Council and the ROC will maintain ultimate accountability. An OG as designated and approved by the ROC for this business unit will be set.

1.02 Natural Gas Operating Group

a) Structure Membership:
The OG will be comprised of constant members and advisory members. Additionally, a committee chair and secretary will be designated. The advisory members will be utilized as necessary to keep the ROC up to date on hedging activity and hedge program compliance monitoring.

Members assigned to the Natural Gas OG are:

- Managing Director, Corporate Services (Chair)
- Managing Director, Energy, Land & Environment
- Director, Finance
- Manager of Energy Marketing & Business Analysis
- Energy Marketing Specialist
- City Treasurer
- Risk Management & Claims Analyst

Advisory Members: The Chairman of the OG may appoint additional advisory members that bring expertise in risk management or the risk management process. Sample staff members who can be brought in on an informational basis as necessary include:

- Director, Electric Generation
- Director, Environment, Land & Gas Production
- Manager of Gas Production/Land Development Engineering
- Portfolio Manager
- City Solicitor or designated representative

b) Meeting Frequency and Procedures

Section 3.03 b) in the Corporate Hedge Policy General Guidelines outlines the meeting frequency, minutes taking protocol and attendance requirements.

c) Responsibilities

Natural Gas OG responsibilities include the following:

- Implement programs that govern commodity hedging activities of the Gas Production business unit and see that risk control processes are compliant with approved policies and procedures.
- Administer hedge program strategies within approved parameters and limits in terms of volume, tool type, price, and time.
- Present any new commodity trading products required not currently authorized to the ROC for approval.
- Oversee the creation of required reporting and performance benchmark measures.
- Review program and controls for approval at a minimum of annually for amendment recommendations for approval to the ROC.
- Determine and seek approval from the ROC on authorized traders and oversee proper transactional documentation authorization.
- Recommend to the ROC for approval the creation of new supplier or exchange accounts/contracts for commodity hedging.
- Oversee the implementation of credit policy as approved by the ROC for measuring the creditworthiness of all energy counterparties and monitoring on- going exposure.
- Meet quarterly at a minimum to review strategy and oversee the implementation of and compliance with established energy production hedge strategy parameters.
- Maintain minutes of meetings.
- Provide as part of the quarterly management reporting to the ROC an overview of the hedging program and any recommended changes in strategy.
- Annually, as part of the year end reporting, provide a summary of Natural Gas hedging program accomplishments for the past year and setting of goals for the upcoming year to the ROC and City Council.

1.03 Executive and Staff Responsibilities

As listed in Section 3 Organization & Governance of the Corporate Hedge Policy General Guidelines, Medicine Hat City Executives and Staff responsibilities with respect to hedge program activities have been outlined. Refer to this section for the given Gas Production manager and supporting City executive/staff roles for program implementation, execution, and oversight. The Managing Director, Corporate Services is responsible for the overall direction, structure, conduct, control, and reporting of Gas Production's hedging activities. More specifically as relates to Natural Gas, the Designated Traders as the Front Office and Finance/Treasury as the Middle/Back Office roles have been listed below:

1.04 Designated Traders

Energy Marketing & Business Analysis' designated traders will serve as the "Front Office" for purposes of Medicine Hat's natural gas and oil commodity forward sales hedging activities and be responsible for the implementation of the hedge program within approved City Council, ROC and OG parameters. The Energy Marketing Specialist will serve as the primary trader for the Gas Production business unit with back up individuals authorized by the –Manager of Energy Marketing & Business Analysis to trade in this staff member's absence. As designated traders are reassigned or leave the company this change will be communicated immediately, and counterparties will be notified as soon as possible.

Designated traders as the Front Office will:

- Work collaboratively with peers in Finance/Treasury and other departments on a monthly basis or as required to discuss markets and hedge program viability.
- Understand the types of transactions Gas Production may engage in to manage the energy commodity portfolio.
- On a quarterly basis analyze the Natural Gas hedge position vs. the program and procedures and determine if additional hedge positions are required.
- Analyze the various tools available to hedge within the procedures and recommend which specific tool to use.
- Execute and manage energy commodity hedge transactions in accordance with approved hedge program and limits as directed and approved by the ROC.
- Adhere to the transaction approval process as approved by the ROC. Communicate transacting efforts to the Finance/Treasury groups as incurred to ensure accurate position reporting and accounting.
- Actively acquire and analyze market intelligence and assist the Manager of Gas Production/Land Development Engineering in developing the hedge program as approved by the ROC.
- Follow approved credit risk management procedure.

1.05 Finance/Treasury

The City's Finance/Treasury group is the "Middle/Back Office" for purposes of Gas Production's hedging activity. This group's responsibilities include preparing reports covering the City's natural gas and oil commodity portfolio position, credit exposures, and hedge program and procedural compliance. Individuals in this department also provide settlement services; document the required accounting treatment of forward transactions; provide the related valuation of these transactions to enable the preparation of invoices and reporting of forward transactions in the City's financial statements in accordance with prevailing accounting rules.
The City Treasurer with assistance from the Treasury group will serve as the primary representatives from Finance in this Middle/Back Office role.

Finance as the Middle/Back Office will:

- Work collaboratively with peers in Energy Marketing & Business Analysis and Gas Production on a monthly basis or as required to discuss hedge program scenarios and activity.
- Ensure that risks for all transactions have been identified and can be valued.
- Monitor the portfolio and hedging activities of Gas Production through a Mark-to-Market Position Report or equivalent.
- Calculate the financial exposure of Gas Production's energy commodity portfolio by applying standard risk measurement and valuation standards.
- Monitor transaction confirmations for accuracy and maintain executed deals in an ongoing reporting system.
- Develop and apply accounting policies to financial transactions.
- Settle transactions (verification, accounts payable/receivable).
- Provide periodic reports, to the City Manager and ROC, on the risk profile of the unit's energy commodity portfolio and on the results of hedging activities.
- Follow approved credit policy and procedures.
- Evaluate counterparties as requested from the designated traders (via the assistance of an approved third-party vendor as needed).
- Halt future trading activity with a particular counterparty when that counterparty is deemed less than creditworthy.
- Upon request, provide written documentation to approved counterparties listing individuals in the City authorized to initiate transactions and sign confirmations.

1.06 City Solicitor

As listed in Section 3.08 of the Corporate Hedge Policy General Guidelines, the City Solicitor will perform legal duties tied to hedging activities as appropriate.

1.07 Conflict of Interest and Compliance

As noted in Section 3.09 of the Corporate Hedge Policy General Guidelines, all City of Medicine Hat employees who hold positions mentioned in this Natural Gas hedge program will not enter into, or direct others to enter into, any energy commodity or other related transactions other than on behalf of the City. Each employee involved with Natural Gas hedge activity will acknowledge in writing initially and as amendments are made that he or she has read this program and that he or she is in full compliance with this program.

1.08 Market Risk Authorizations and Limits

The following market risk authorizations and limits will be set by the ROC to govern the Natural Gas commodity hedging activity.

1.09 Forward Hedging Methodologies and Strategies

Successful management of the price and volumetric risks faced by the Gas Production unit requires analysis, monitoring, and communication. The Manager of Gas Production/Land Development Engineering and the Manager of Energy Marketing & Business Analysis together with the OG and the ROC, will develop forward sales hedging strategies with targeted implementation plans to manage the volumetric and price risks faced by the Gas Production unit.

The objective of Natural Gas forward sales hedge planning, in line with this program, is to mitigate commodity price volatility associated with Gas Production's assets via a methodological approach. The full Natural Gas Hedge Program Methodology is included as Appendix B of this document.

1.10 Commodity Markets/Products

To optimize energy commodity and energy commodity-related transactions, and increase the likelihood of Gas Production selling at a reasonable price to better stabilize revenues and protect its production assets, the Gas Production unit will be authorized to transact business in all markets and with all instruments appropriate to its business needs in accordance with this Hedge Program and as approved by the ROC.

1.11 Authorized Commodity Markets/Products

Medicine Hat authorized market and product types are the following:

- Forward Physical Contract - A contract for future delivery of a designated quantity of natural gas at a designated price, time, and location. Physical forward contracts obligate both the buyer and seller to accept the agreed-upon price, regardless of the market price when the delivery takes place.

- Financial Futures - A standardized binding agreement to buy or sell a specified quantity or grade of a commodity at a later date. Futures contracts are freely transferable, can be traded exclusively on regulated exchanges and are settled daily based on their current value in the marketplace.

- Physical/Financial Options - A contract which gives the holder the right, but not the obligation, to purchase or sell the underlying contract at a specified price within a specified period of time in exchange for a one-time premium payment. The contract also obligates the writer, who receives the premium, to meet these obligations.

- Over the Counter (OTC) Swaps - Any financial instrument that is customized and created by a counterpart to replicate the risk profile associated with a commodity or basis risk.

The OTC swap tool allows two parties to fix price without physical delivery. The two parties agree to a fixed price, location, commodity index/energy publication delivery point, quantity, and period.

- Physical/Financial Basis Contracts - a fixed price to lock in the locational price difference between the underlying commodities physical/futures contract and the desired location for fixing the commodity price.

Gas Production is authorized to transact in the following specific commodities and markets for forward sales hedging purposes:

- Physical Markets for:
  - Natural Gas - Canadian markets
  - Crude Oil - North American markets

- Financial Markets for Natural Gas and Crude Oil:
  - Exchanges - CME/NYMEX or ICE
  - Over the Counter (OTCC) Bilateral Swaps for Canadian Natural Gas markets and North American Crude Oil markets

1.12 Authorized Transaction Types

The Natural Gas Hedge Program will be executed using financial derivative instruments and physical supply contracts. The following list describes and identifies the authorized products.

- Purchase/Sale of Physical Forwards (Fixed)
- Purchase/Sale of Financial Futures/OTC Swaps
- Purchase/Sale of Physical Contracts with Optionality
- Purchase/Sale of Financial Options
- Purchase/Sale of Physical Basis Transactions
- Purchase/Sale of Financial Basis Transactions (Options/Futures)

1.13 New Products and Transaction Types

The Natural Gas Hedge Program will follow the guidelines for adding new products or transaction types as outlined in Section 4.04 of the Corporate Hedge Policy General Guidelines. Those guidelines require City Council approval for additions/updates to the Natural Gas Hedge Program.

1.14 Transaction Limits

The limits for the Natural Gas Hedge Program are outlined for authorized traders, volumes and horizons as documented in the Natural Gas PROGRAM - APPENDIX B. Those limits require ROC approval for additions/updates to the Natural Gas Hedge Program.

a) Authorized Personnel
The OG and ROC will identify hedge execution authority to staff titles responsible for executing approved forward sales hedge program strategies. This list will be maintained in APPENDIX B (page 35) to this document and be updated as the ROC dictates necessary.

b) Volume
The OG, with the approval of ROC, will set the current acceptable volume limits for hedging forward sales. These volumes will be included as part of the approved Hedging Program Methodologies and Strategies as documented in the Natural Gas PROGRAM - APPENDIX B of this document.

c) Time Horizon
The ROC will set the current acceptable durational limits for hedging forward sales. These volumes will be included as part of the approved Hedging Program Methodologies and Strategies as documented in the Natural Gas PROGRAM - APPENDIX B of this document.

1.15 Changing Limits

Designated traders handling Gas Production's forward sales hedging are responsible for maintaining all limits. The Middle/Back Office will monitor the effectiveness of limits to control transaction activities and propose changes in limits to OG for approval by the ROC as market conditions or operating circumstances warrant.

2. CREDIT RISK MANAGEMENT POLICY

To protect its financial integrity, Gas Production with assistance from the City Finance department (and outside approved vendors as deemed necessary) will actively manage its credit risk by making informed decisions regarding which counterparties to transact with and how much business it will conduct with them in line with Appendix D of this policy.

3. KEY TRANSACTING PROCEDURES

To carry out the provisions of this program, City staff will follow key processes that maintain the internal control segregating the duties between front office transacting and middle/back office monitoring and compliance.

Additionally, to protect the reliability of Gas Production's forward sales hedge process and to ensure the maintenance of valid data, the identified procedures below will be implemented:

- Only personnel authorized by the OG and the ROC can transact on behalf of Gas Production in the energy commodity markets.
- Gas Production may only transact in energy commodity market products recommended by the OG and the ROC. Gas Production may only transact within limits approved and defined in this program.
- All energy commodity hedge transactions will be recorded and documented.
- Metrics for assessing Gas Production's market risk exposure will be specified, measured, monitored, and reported on a regular basis.
- All hedge transactions will be captured in the City's financial records.

4. CONTRACT NEGOTIATION

The Manager of Energy Marketing & Business Analysis with the assistance of the City Solicitor is responsible for negotiating and executing (signed by City Clerk and Mayor) hedge transaction governing agreements with energy commodity suppliers or market exchanges. The City Manager must approve all final agreements prior to execution. The negotiation process will take place prior to actual energy commodity forward sales arrangements to provide the most flexibility possible.

It is also the intent to have at least two providers with approved governing agreements in place prior to awarding forward sales contracts in order to ensure competitive pricing. In addition, existing contracts will be monitored for expiration terms and either renegotiated for extension or issued up for bid in a timely manner by the Manager of Energy Marketing & Business Analysis with the support of the Finance group.

4.01 Market Monitoring and Execution Steps

The designated traders will monitor energy commodity market movement on a daily basis for the execution of value forward selling or revenue stabilization limits within the time parameters as approved in the current hedge program.
As required, meetings will also be held between the Front and Middle Office representatives to discuss current markets and the current status of the hedge program to set targets.

When price levels are hit, hedge positions will be sought with approved counterparties. If any counterparty is not currently on the list, a new evaluation will be conducted. The approved counterparty credit report will also be reviewed to guide Gas Production in contract assignment to prevent against the potential of portfolio concentration risk.

4.02 Transaction Confirmation and Capture Process

Once forward sales contracts have been negotiated and finalized, the Manager Energy Marketing & Business Analysis and the City Treasurer will both be responsible for verifying the terms of the deal against confirms received directly from the counterparty.
The Middle/Back Office will be responsible for forwarding the approved confirmation to the counterparty and for entering the financial data into the tracking system for monitoring ongoing exposure.

For each transaction, at a minimum, the following data will be created:

- Hedge trigger point
- Trader and counterparty
- Commodity, trade date, purchase/sale, volume, price, and delivery period

4.03 Bill Audit Process

The Middle/Back Office will be responsible for monitoring monthly invoice data to identify and address any discrepancies that need correcting.

5. REPORTING

Reports required by this program communicate the market and credit risks assumed by the Gas Production business unit and provide information to evaluate the portfolio performance and the effectiveness of the hedging program. The reporting structure as outlined in Section 6 Reporting in the Corporate Hedge Policy General Guidelines will be followed in the ongoing operation of the Natural Gas hedge program.

Management reporting will act as a formal means of communicating the performance of energy commodity hedge transactions. On an ongoing basis, management and staff must also establish sufficient communications among parties with responsibilities relative to this program.

The following table identifies the reports that will be generated, their normal frequency, distribution, and the originator of the report:

Report	Distribution	Normal Frequency	Originator
Mark-to-Market Position Report	ROC/OG Front Office	As requested	Middle/Back Office
Variance to Budget Report	ROC/OG Front Office	Quarterly	Middle/Back Office
Approved Counterparties	ROC/OG Front Office	Quarterly	Middle/Back Office
Credit Risk Exposure Report	ROC/OG Front Office	Monthly	Middle/Back Office
Limit Exception Reporting	ROC/OG Front Office	As Incurred	Middle/Back Office
ROC-OG Meeting	ROC/OG	As Meetings Held	City Clerk
Minutes		As Meetings Held	OG Designated Secretary
Risk Management Activities		Annually	City Manager

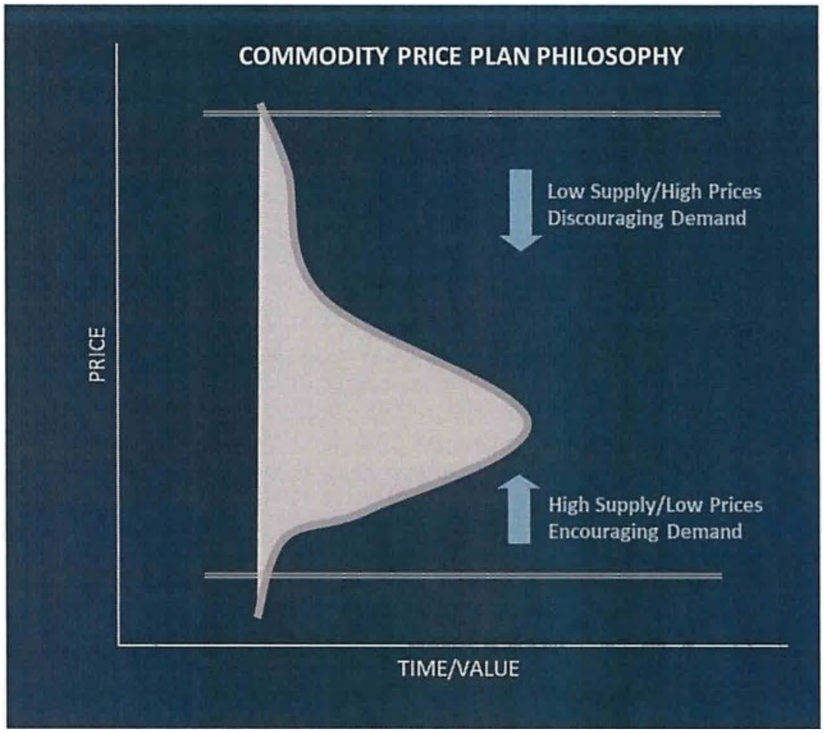
6. PROGRAM REVIEW

As noted in Section 8 Program Review in the Corporate Hedge Policy General Guidelines, following approval of this Natural Gas Hedge Program, the ROC will periodically review the program and recommend updates as appropriate as provided by the OG.

NATURAL GAS HEDGE PROGRAM METHODOLOGY

OVERVIEW

Energy commodity prices, like all freely traded commodities, exhibit strong mean reversion tendencies over time. When prices rise to historically high levels, the high prices encourage more production and discourage demand, eventually driving prices lower. Conversely, when prices are historically low, production is curtailed and usage of that commodity tends to increase, ultimately supporting a price rally - as illustrated below:



Natural Gas Hedge Strategy Synopsis

Because the energy commodities markets have continued to exhibit intensified volatility, a more defined and disciplined approach to procuring or marketing those commodities has become the standard among the energy industry. This more disciplined approach to hedging future commodity sales usually includes price, time, and potential budgetary objective protection targets. The Natural Gas Hedge Program Methodology will use five variables to achieve reasonable and rational pricing diversification. Specifically, these criteria are:

(1) Historic price value
(2) Budget cost objective protection
(3) Time targets
(4) The application of multiple tools
(5) Discretionary review

HISTORIC PRICE VALUE

The Hedge Program is designed to identify prices that represent reasonable and good values and to secure those prices. The Program will look at crude oil and natural gas projected sales for up to 3 years into the future. The Program is intended to maximize the amount and duration of desirable energy commodity levels that are obtained, while keeping in mind the main objectives of mitigating volatility and stabilizing revenues on a portion of gas production.

FCStone has developed a more objective methodology to identify prices that are historically attractive through the use of the innovative Price Matrix model. As an example for natural gas, four years of daily prices will be gathered for the AECO hub. The Price Matrix calculates the historical prompt-month price distribution of various forward contracts. The construction of the Price Matrix begins with the collection of the preceding four years of prompt-month daily closing price data. These historical prices are subsequently adjusted for inflation using the corresponding monthly Producer Price Index, or PPI. The inflation-adjusted prices, composed of roughly 1,000 data points, are placed in two 'buckets'. One bucket contains all four years of the inflation-adjusted price data, while another bucket holds the inflation-adjusted price data of only the most recent one year.

The prices in each bucket are equally divided into deciles based on their distribution frequency. Each decile represents the range which includes 1/10th of the price data. The decile data in both buckets are combined to produce the Price Matrix. So that the market price environment of the most recent period carries the greatest significance or importance, the Price Matrix is formulated by weighting the four-year decile data at 80% and the most recent one-year decile data at 20%.

The result is a Price Matrix which summarizes the historical ranges of prompt-month prices in a format easily understood by sellers and executives. The resulting data is displayed in a distribution model of deciles between 0% and 100% The 100% to the 50% decile is representative of value from a seller's perspective with anything above the 50% level indicative of potential selling points. To keep pace with dynamic market conditions the Price Matrix is updated, or recalculated, on the first business day of each month in a rolling format. The oldest month's data is removed from both the four- and one-year buckets as the most recent month is added.

Because Gas Production budgets and looks to protect a given Fiscal Year, an annual compilation of data will be used for natural gas and crude oil. As these commodities are Canadian based, adjustments will be made for the appropriate unit and currency.

Gas Production PRICE MATRICES

The forward energy prices for the respective fiscal years will be monitored against the natural gas and crude oil price matrices to determine if and when a forward sales target is reached. A tier approach to targets will be employed for a scaled methodology approach to forward selling. By not committing to sales until the 50% decile or higher (above the median), there is flexibility to participate in higher prices without being committed to long-term values that are lower than historical norms. In addition, the higher the prices move, demonstrating greater value, more of the uncovered position will be purchased.

Being mindful that volumes defined by forecasted monthly production become less reliable further out in time, the selling volume targets will be reduced accordingly.

Thus, while the first fiscal year will encompass selling targets up to 25% of projected production volume above the 50% decile, the second fiscal year will include only 10% of projected production volumes above the 50% decile and the third fiscal year no more than 5% of production levels. Beyond that there would be no price targets until the current fiscal year rolls off and the following fiscal year becomes the approaching target hedge period. The Historic Price Value targets will coincide with Budget Cost Objective targets as noted under the Budget Cost Objective targets section and in the Gas Production Natural Gas/Crude Oil Hedge Program Tables.

Note - The Price Matrices are NOT meant to predict price. This matrix data is used as a framework to identify historically attractive prices.

A sample Natural Gas (AECO) matrix (Price per GJ Can$ of actual observed market prices over historic 4-year period) is the following:

	NATURAL GAS - ANNUAL AECO 4 - YR CAD PER GJ			
	Mean	2.65		
	Median	2.49		
Value Area*	90% - MAX	3.95	-	5.45
	80% - 90%	3.54	-	3.95
	70% - 80%	2.78	-	3.54
	60% - 70%	2.64	-	2.78
	50% - 60%	2.49	-	2.64
	40% - 50%	2.39	-	2.49
	30% - 40%	2.26	-	2.39
	20% - 30%	2.04	-	2.26
	10% - 20%	1.70	-	2.04
	MIN - 10%	1.03	-	1.70
	AS OF 12/27/17			

** Sample chart numbers as of December 2017, updated monthly.*

A Sample Crude Oil (WCS) matrix (Price per Barrel Can$ of actual observed market prices over historic 4-year period) is the following:

CRUDE OIL - ANNUAL WCS All-In 4 - YR CAD per BBL			
Mean	53.40		
Median	48.47		
90% - MAX	80.80	-	94.23
80% - 90%	74.38	-	80.80
70% - 80%	55.64	-	74.38
60% - 70%	50.83	-	55.64
50% - 60%	48.47	-	50.83
40% - 50%	46.04	-	48.47
30% - 40%	43.67	-	46.04
20% - 30%	41.21	-	43.67
10% - 20%	36.31	-	41.21
MIN - 10%	23.05	-	36.31
AS OF 12/27/17			
No data midDec16-Mar28-17			

Value Area*

** Sample chart numbers as of December 2017, updated monthly.*

BUDGET COST OBJECTIVES

As a means to protect a certain production budget cost objective level, Gas Production will apply hedge execution targets when prices are favorable to maintain that projected budget cost objective in conjunction with Historical Price Value targets. As with Historical Price Value targets, a tier approach will be employed for a scaled methodology approach to forward selling.

Medicine Hat would not be able to hedge until the set budgeted cost objective level (or higher increments) is hit, as measured against the forward commodity swap price. As a result, there is flexibility to participate in higher prices. In addition, the higher the prices move, demonstrating greater budgeted cost objective protection, more of the uncovered position will be forward sold (up to 25% year 1, up to 10% year 2 and 5% year 3). Whichever target is reached first between Historic Price Value or Budget Cost Objective will drive hedge execution activity. As Budget Cost Objective numbers are adjusted, the Budget Cost Objective triggers will also be adjusted accordingly.

Budget Cost Objectives for use in the program incorporate from covering Fixed and Variable Costs up to achieving a projected ROI of 10%. Budget Cost Objectives for the Natural Gas Hedge Program for 2016 have been outlined as follows (2017-2018 will vary slightly):

NGPR 2018 Forecast Budget Cost Objectives

Objective	NG $/GJ	Oil $/bbl
1. Fixed and Variable Operating Costs	$ 2.56	$ 29.35
2. #1 plus G&A costs	$ 3.46	$ 34.75
3. #2 plus Future Abandonment Costs (accretion)	$ 4.26	$ 38.06
4. #3 plus Repayment of Investment (depreciation & depletion)	$ 5.42	$ 57.71
5. #4 plus 10% Return on Equity	$ 5.76	$ 61.19

TIME TARGETS

Time Targets will be used when Gas Production has not satisfied its requirement quantities under the Historic Price Value or Budget Cost Objective target parameters by a specified date prior to the start of a given fiscal year. A minimum amount of forward sales must be executed at current market levels. This time parameter component ensures that Gas Production will have some degree of diversification and needed price stability on its energy production prior to the start of the upcoming fiscal year. As an added level of protection for the City in times of extremely low prices [extreme low prices are defined as prices below the cost of production], no Time Targets will apply and no hedging will be done if forward prices are below the 20% decile or below the Fixed and Variable Operation Budget Cost Objective. Both the decile limit and the budget cost objective limits are measured against the forward swap commodity price at the time of the hedge, excluding hedging premium costs.

APPLICATION OF MULTIPLE TOOLS

The Hedge Program will allow Gas Production to have the discretion to execute one of several instruments. The possible pricing tools include fixed pricing or option-based transactions (and can be futures or swaps). The mix of pricing tools applied will help to provide both price stability and market sensitivity to the overall energy commodity portfolio.

Option-based transactions such as put floors and put collars guarantee a minimum price level, but also allow Gas Production as a seller to participate in higher prices if the market trend is higher. While put floors have a premium cost, put collars may be placed at or close to a zero premium. These strategies are particularly helpful when executing a position at lower price levels or if production forecasts tend to have a greater degree of variability. Fixed pricing gives the portfolio a more definitive price guarantee to add balance to the overall commodity revenue projections but is most effective when prices are historically higher and volume projections are less variable.

The Medicine Hat program will utilize a mix of tools that will include put options, put collars and swaps. Outright Put Option premiums will be based on 5% of the underlying swap price but not to exceed 7.5% of the total underlying swap. Put collars will be done at costless and the range should be no more than 10% above or 10% below the corresponding swap price.

At the time a hedge is required, designated traders will review the various strategies and determine which specific tools are best suited to market conditions based on the given hedge execution target triggered.

DISCRETIONARY REVIEW

A well-defined and disciplined approach to forward selling will provide Gas Production with price stability through a diversified portfolio. While the guidelines described above are meant to be followed, there will be market scenarios that require more discretionary review. When there are questions regarding specific forward selling transactions beyond current approvals, Gas Production will work with the Operating Group and Risk Oversight Committee (ROC) to gain authorization for these special circumstances. Any such decisions will be documented in ROC meeting minutes and reported to City Council as incurred.

As an example of a special circumstance, if approved by the ROC and Council, Gas Production may consider hedging a commodity using financial/physical instruments having terms exceeding the 3 years identified in the Hedge Program Procedure.

Additionally, when considering hedges for new acquisitions, acquisition costs should be a major consideration. The inclusion of volumes from new acquisitions should not automatically be included in the original hedge program volumes.

Natural Gas Hedge Program Summary

- Maximum Volume allowed will initially be hedged set at 25% of forecasted base production. Volumes dedicated to long term contracts, if any, should be excluded from the volume available to hedge.
- Volumes to be hedged will be based on the business unit's best estimates prior to a budget year. These figures may need periodic adjustments based on operational conditions. Commodity volume estimates for the budget year will not include future development or exploration volumes pending proved production from those programs.
- The Time Horizon will be from a minimum of 6 months to a max of 3 years prior to the start of a fiscal year contingent on which hedge program parameters are within target range.
- Price targets will be based on Budget Cost Objectives in conjunction with Historical Price Deciles as measured against the forward swap commodity price and the lower of the two will be applicable.
- If the Time Trigger has been elected and the percentage hedge requirement has not been fulfilled by a previously hit Budget Cost Objective or Historical Value Trigger, then the City will secure hedges to meet the Time Parameter percentage requirement – unless the forward price curve is below the 20th decile or below the Fixed and Variable Operating Cost Objective, both as measured against the forward swap commodity price. In this case, no hedging will be done.
- Options – the program will utilize a mix of tools that will include put options, put collars, and swaps. Outright Put Option premiums will be based on 5% of the underlying swap

price but not to exceed 7.5% of the total underlying swap. Put collars will be done at costless and the range should be no more than 10% above or below the corresponding swap price.

- When possible the Electric hedge program will work in conjunction with the Natural Gas business unit to synergize natural gas supply/demand or to coordinate on counterparties to better mitigate and monitor credit risk.
- An annual review of the Natural Gas hedge program is mandatory (the City may consider larger max hedge volumes, different tools, or change durations as the program matures).
- When considering hedges for new acquisitions, acquisition costs should be a major consideration. The inclusion of volumes from new acquisitions should not automatically be included in the original hedge program volumes. These initiatives should be analyzed and discussed by the Operating Group, and approved by the ROC, with great attention being paid to the cost of the production.
- Under special circumstances, if approved by the ROC and Council, Gas Production may consider hedging a commodity using financial/physical instruments having terms exceeding the 3 year limit.

SAMPLE TABLES TO DRIVE HEDGE ACTIVITY *(Note – Decile numbers to be updated monthly and budget numbers annually. Numbers as at December, 2017)*

AECO Natural Gas Can$/GJ	Forecast Cost Objectives (FCO) and Historic Value Triggers 25% Cap					Time Triggers – 15% Cap* *Only applicable if FCO/Value triggers have not already satisfied these volume requirements AND Prices are above F/V Op costs + the Deciles are between the 20th and 50th*		
	@ Fixed & Var Op 2018 $2.56 2019- $2.71 2020-$2.90 Or 50th Decile $2.49	+ G&A 2018 $3.46 2019- $3.67 2020-$3.96 or 60th Decile $2.64	+ Abndmt 2018 $4.26 2019- $4.50 2020-$4.84 or 70th Decile $2.78	+ Inv Rpymt 2018 $5.42 2019- $5.76 2020-$6.04 or 80th Decile $3.54	+10% ROI 2018 $5.76 2019- $6.13 2020-$6.44 or 90th Decile $3.95	1st Time Trigger	2nd Time Trigger	3rd Time Trigger
FiscalYear 0,1 Jan18-Dec 18 Jan 19-Dec 19	5%	5%	5%	5%	5%	Apr 18 – Jun 18 5%	Jul 18 – Sep 18 5%	Oct 18 – Dec 18 5%
Fiscal Year 2 Jan 20-Dec 20				5%	5%	Apr 19 – Jun 19 5%	Jul 19 – Sep 19 5%	Oct 19 – Dec 19 5%
Fiscal Year 3 Jan 21-Dec 21					5%	Apr 20 – Jun 20 5%	Jul 20 – Sep 20 5%	Oct 20 – Dec 20 5%
TOOL MIX	100% Puts		Puts or Put Collars	Puts, Put Collars or Fixed Swaps		100% Puts		

WCS Crude Oil Can$/BBL Budget and WTI Crude OIL Deciles Can$/BBL	**Forecast Cost Objectives and Historic Value Triggers 25% Cap**					**Time Triggers – 15% Cap*** *Only applicable if FCO/Value triggers have not already satisfied these volume requirements AND Prices are above F/V Op costs + the Deciles are between the 20th and 50th*		
	@ Fixed & Var Op 2018 $29.35 2019- $30.01 2020-$35.29 or 50th Decile $65.18	+ G&A 2018 $34.75 2019- $35.80 2020-$41.74 or 60th Decile $68.38	+ Abndmt 2018 $38.06 2019- $39.80 2020-$46.58 or 70th Decile $71.66	+ Inv Rpymt 2018 $57.71 2019- $61.03 2020-$67.50 or 80th Decile $88.69	+10% ROI 2018 $61.19 2019- $64.61 2020-$71.67 or 90th Decile $102.40	1st Time Trigger	2nd Time Trigger	3rd Time Trigger
FiscalYear 0,1 Jan18-Dec 18 Jan 19-Dec 19	5%	5%	5%	5%	5%	Apr 18–Jun 18 5%	Jul 18 – Sep 18 5%	Oct 18 – Dec 18 5%
Fiscal Year 2 Jan 20-Dec 20				5%	5%	Apr 19 – Jun 19 5%	Jul 19 – Sep 19 5%	Oct 19 – Dec 19 5%
Fiscal Year 3 Jan 21-Dec 21					5%	Apr 20 – Jun 20 5%	Jul 20 – Sep 20 5%	Oct 20 – Dec 20 5%
TOOL MIX	WTI Puts; WTI-WCS Swaps or Puts		WTI Puts or Put Collars	Puts, Put Collars or Fixed Swaps		WTI Puts; WTI-WCS Swaps or Puts		

***NO HEDGING WILL BE DONE IF PRICES ARE BELOW THE 20th DECILE OR BELOW FIXED AND VARIABLE OPERATING BUDGET OBJECTIVE COSTS**

The trading of derivatives such as futures, options, and over-the-counter (OTC) products or "swaps" may not be suitable for all investors. Derivatives trading involves substantial risk of loss, and you should fully understand those risks prior to trading. Past financial results are not necessarily indicative of future performance. All references to futures and options on futures trading are made solely on behalf of the FCM Division of INTL FCStone Financial Inc., a member of the National Futures Association ("NFA") and registered with the U.S. Commodity Futures Trading Commission ("CFTC") as a futures commission merchant. All references to and discussion of OTC products or swaps are made solely on behalf of INTL FCStone Markets, LLC ("IFM"), a member of the NFA and provisionally registered with the CFTC as a swap dealer IFM's products are designed only for individuals or firms who qualify under CFTC rules as an 'Eligible Contract Participant' ("ECP") and who have been accepted as customers of IFM.

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AUTHORIZED PERSONNEL

Title

Manager of Energy Marketing & Business Analysis; Energy Marketing Specialist
Note - Managing Director, Energy, Land & Environment has the authority to appoint a designee in the absence of the Manager of Energy Marketing & Business Analysis

The Credit Risk Policy (Appendix D) applies to the Natural Gas Hedge Program.

APPENDIX C

ELECTRIC HEDGE PROGRAM

Electric HEDGE PROGRAM OBJECTIVES

As an electricity provider, the Electric Generation unit within the City is exposed to and needs to manage a variety of risks including the risks identified in Section 2.01 of the Corporate Hedge Policy General Guidelines.

This Electric hedge program document is designed to address those identified risks and is focused on furthering the objectives as listed in Section 2.02 of the Corporate Hedge Policy General Guidelines document. Those additional objectives are:

- Control price exposure to Electric Generation that arises from occasional disconnects between fixing the sale price of power to a client or client base and the corresponding purchase of natural gas or power.
- Manage or reduce costs on Electric assets and power purchase agreements within acceptable and defined operational and economic parameters.

1. ORGANIZATION & GOVERNANCE

As noted in Section 3 of the Corporate Hedge Policy General Guidelines, hedge programs for Medicine Hat are designed for implementation within the City's existing organization structure and by existing staff. The Electric Hedge program follows similar governance protocol as outlined in the Hedging Policy and Procedures. Accountability for the hedging program rests with the Risk Oversight Committee (ROC) and City Council. Approved by ROC, separate Operating Group (OG) for each business unit is formed and is responsible for administering the business unit commodity risk management and implementation efforts.

1.01 Electric Operating Group

a) Structure Membership:
The OG will be comprised of constant members and advisory members. Additionally, a committee chair and secretary will be designated. Advisory members will be utilized as necessary to keep the ROC informed of any hedging activity and to ensure hedge program compliance monitoring.

Members assigned to the Electric Generation OG are:

- Managing Director, Corporate Services (Chair)
- Managing Director, Energy, Land & Environment
- Director, Finance

- Manager of Energy Marketing & Business Analysis
- Energy Marketing Specialist
- City Treasurer
- Risk Management & Claims Analyst

The Chairman of the OG may appoint additional advisory members that bring expertise in risk management or the risk management process. Sample staff members who can be brought in on as needed basis include:

- Director, Electric Generation
- Director, Environment, Land & Gas Production
- Manager of Gas Production/Land Development Engineering
- Portfolio Manager
- City Solicitor or designated representative

b) Meeting Frequency and Procedures

Section 3.01 b) in the Corporate Hedge Policy General Guidelines outlines the meeting frequency, minutes taking protocol and attendance requirements.

c) Responsibilities

Electric OG responsibilities include:

- Implement programs and plans that govern commodity hedging activities of the Electric business unit and see that risk control processes are compliant with approved policies and procedures.
- Administer the Electric hedge program strategies within approved parameters and limits in terms of volume, tool type, price, and time.
- Present any new required commodity trading products for ROC approval.
- Oversee the creation of required reporting and performance benchmark measures.
- Review hedging program and controls; recommend amendments at least annually for approval by the ROC.
- Determine and seek approval from the ROC on authorized traders and oversee proper transactional documentation and authorization.
- Recommend to ROC the approval and creation of new supplier accounts, exchange accounts or contracts to facilitate the commodity hedging process.
- Oversee the implementation of credit policy as approved by the ROC for measuring the creditworthiness of all energy counterparties and monitoring ongoing exposure.

- Meet quarterly at a minimum to review strategy and oversee the implementation of and compliance with established Electric hedge strategy parameters.
- Maintain minutes of meetings.
- Provide as part of the quarterly management reporting to the ROC an overview of the hedging program and any recommended changes in strategy.
- Annually, as part of the year end reporting, provide a summary of the Electric hedging program accomplishments for the past year and setting of goals for the upcoming year to the ROC and City Council.

1.02 Executive and Staff Responsibilities

Section 3 of the Hedging Policy (Organization & Governance) outlines City Executives and Staff's responsibilities with respect to hedging program activities. In this section management and supporting executive staff and governing bodies are identified and defined. The Managing Director, Corporate Services is responsible for the overall direction, structure, conduct, control, and reporting of Electric's hedging activities. More specifically, and as related to the Electric hedge program, Designated Trader (Front Office) and Finance/Treasury (Middle/Back Office) roles have been defined below:

1.03 Designated Traders

Designated traders will serve as the "Front Office" for purposes of Medicine Hat's energy commodity forward sales hedging activities and be responsible for the implementation of the hedge program within approved parameters by City Council, ROC and OG. The Front Office will establish and follow separate internal policies and procedures to ensure compliance with the FEOC (Fair, Efficient, Open Competition) regulation in Alberta.

The Manager of Energy Marketing & Business Analysis or Energy Marketing Specialist will serve as the primary traders for the Electric hedge program. The Managing Director, Energy, Land & Environment is authorized to appoint a designee in the absence of the approved traders.

As designated traders are reassigned or leave the company this change will be communicated immediately, and counterparties will be notified as soon as possible.

Designated traders as the Front Office will:

- Work collaboratively with peers in Finance/Treasury and other departments as required to discuss markets and hedge program viability.
- Execute and manage energy commodity hedge transactions in accordance with approved hedge program and limits as directed and approved by the ROC.

- Understand the types of transactions individuals may engage in to manage the energy commodity portfolio.
- Adhere to the transaction approval process as approved by the ROC.
- Communicate transacting efforts to the Finance group as incurred to ensure accurate position reporting and accounting.
- Actively acquire and analyze market intelligence and assist the Director, Electric Generation in developing the hedge program as approved by the ROC.
- Follow the approved credit policy.

1.04 Finance/Treasury

The City's Finance/Treasury group is the "Middle/Back Office" that supports the Electric hedging activity. This group's responsibilities include preparing reports covering the City's natural gas and power commodity portfolio positions, credit exposures, and hedge program and procedural compliance. Individuals in this department also provide settlement services; document the required accounting treatment of forward transactions; provide the related valuation of these transactions to enable the preparation of invoices and reporting of forward transactions in the City's financial statements in accordance with prevailing accounting rules.
The City Treasurer with assistance from the Treasury group will serve as the primary representatives from Finance in this Middle/Back Office role.
Finance as the Middle/Back Office will:

- Work collaboratively with peers in the Energy division as required to discuss hedge program scenarios and activity.
- Ensure that risks for all transactions have been identified and can be valued.
- Monitor the portfolio and hedging activities of Electric through a Mark-to-Market Position Report or equivalent.
- Calculate the financial exposure of Electric's energy commodity portfolio by applying standard risk measurement and valuation standards.
- Monitor transaction confirmations for accuracy and maintain executed deals in an ongoing reporting system.
- Develop and apply accounting policies to financial transactions.
- Settle transactions (verification, accounts payable/receivable).
- Provide periodic reports, to the City Manager and ROC, on the risk profile of the unit's energy commodity portfolio and on the results of hedging activities.
- Follow approved credit policy and procedures.
- Evaluate counterparties as requested from the designated traders (via the assistance of an approved third-party vendor as needed).
- Halt future trading activity with a particular counterparty when that counterparty is deemed less than creditworthy.
- Upon request, provide written documentation to approved counterparties listing individuals in the City authorized to initiate transactions and sign confirmations.

1.05 City Solicitor

As listed in Section 3.08 of the Corporate Hedge Policy General Guidelines, the City Solicitor will perform legal duties tied to hedging activities as appropriate.

1.06 Conflict of Interest and Compliance

As noted in Section 3.09 of the Hedging Policy, all CMH employees who hold positions mentioned in the Electric hedge program will not enter into, or direct others to enter into, any energy commodity or other related transactions other than on behalf of the City. Each employee involved with Electric hedge activity will acknowledge in writing initially and as amendments are made that he or she has read this program and that he or she is in full compliance with this program.

2. MARKET RISK AUTHORIZATIONS AND LIMITS

The following market risk authorizations and limits will be set by the ROC and approved by the City Council to govern the Electric commodity hedging activity.

2.01 Forward Hedging Methodologies and Strategies

Successful management of the price and volumetric risks faced by the electric business unit requires analysis, monitoring, and communication. The Director, Electric Generation and Manager of Energy Marketing & Business Analysis, together with the OG and with the approval of ROC, will develop hedging strategies with targeted implementation plans to manage the volumetric and price risks faced by the electric generation and retail business units.

The objectives of the Electric hedge program are to mitigate commodity price volatility associated with Electric Generation's cost of production, protect the power sales margin and maximize power production assets via a methodological approach. The full Electric Hedge Program Methodology is included as Appendix C of this document.

2.02 Commodity Markets/Products

To optimize electric energy commodity and commodity-related transactions, and to increase the likelihood of selling at a reasonable price while stabilizing revenues and protecting production assets, administration will be authorized to transact business in all markets and with all instruments that are appropriate to its business needs and in accordance with this Hedge Program, as approved by the ROC and City Council.

Authorized Commodity Markets/Products
The authorized hedging products and markets are as follows:

- Forward Physical Contract - A contract for future delivery of a designated quantity of natural gas or power at a designated price, time, and location. Physical forward contracts obligate both the buyer and seller to accept the agreed-upon price, regardless of the market price when the delivery takes place.
- Financial Futures - A standardized binding agreement to buy or sell a specified quantity or grade of a commodity at a later date. Futures contracts are freely transferable, can be traded exclusively on regulated exchanges and are settled daily based on their current value in the marketplace.
- Financial Options - A contract which gives the holder the right, but not the obligation, to purchase or sell the underlying contract at a specified price within a specified period of time in exchange for a one-time premium payment. The contract also obligates the writer, who receives the premium, to meet these obligations.

Over the Counter (OTC) Swaps

Any financial instrument that is customized and created by a counterpart to replicate the risk profile associated with a commodity or basis risk. The OTC swap tool allows two parties to fix price without physical delivery. The two parties agree to a fixed price, location, commodity index/energy publication delivery point, quantity, and period.
Designated Traders are authorized to transact in the following specific commodities and markets for forward sales hedging purposes:

- Physical Markets for:
  - Natural Gas - Canadian markets
  - Power - Alberta Electric System Operator Power Pool
- Financial Markets for Natural Gas and Power:
  - Exchanges - CME/NYMEX or ICE
    i. Includes the Purchase/Sale of Financial Options
  - Over the Counter (OTC) Bilateral Swaps for Canadian and United States Natural Gas markets and Power markets

2.03 Authorized Transaction Types

The Electric Hedge Program will be executed using financial derivative instruments and physical supply contracts. The following list describes and identifies the authorized products.

- Purchase/Sale of Physical Forwards (Fixed)
- Purchase/Sale of Financial Futures/OTC Swaps
- Purchase/Sale of Financial Options

2.04 New Products and Transaction Types

The Electric program will follow the guidelines for adding new products or transaction types as outlined in Section 4.04 of the Corporate Hedge Policy General Guidelines. Those guidelines require ROC approval for additions/updates to the Electric Hedge Program.

2.05 Transaction Limits

The limits for the Electric Hedge Program are outlined for authorized traders, volumes and horizons as documented in APPENDIX C - Electric Hedge Program Methodology. Those limits require ROC approval for additions/updates to the Electric Hedge Program.

a) Authorized Personnel
The OG, with the approval of ROC will identify hedge execution authority to staff titles responsible for executing approved forward purchases and sales hedge program strategies, within ROC approved parameters. This list will be maintained in APPENDIX C of this document and be updated as necessary.

b) Volume
The OG, within ROC approved parameters, will set the current acceptable volume limits for hedging forward purchases and sales. These volumes will be included as part of the approved Hedging Program Methodologies and Strategies as documented in APPENDIX C - Electric Hedge Program Methodology.

c) Time Horizon
The ROC will set the current acceptable durational limits for hedging forward purchases and sales. These volumes will be included as part of the approved Hedging Program Methodologies and Strategies as documented in APPENDIX C - Electric Hedge Program Methodology.

2.06 Changing Limits

Designated traders handling forward purchases and sales hedging are responsible for maintaining all limits. The Middle/Back Office will monitor the effectiveness of limits to control transaction activities and propose changes in limits to OG for approval by the ROC as market conditions or operating circumstances warrant.

3. KEY TRANSACTING PROCEDURES

To carry out the provisions of this program, staff will follow key processes that maintain the internal control segregating the duties between front office transacting and middle/back office monitoring and compliance. Additionally, to protect the reliability of forward purchases and sales hedge process and to ensure the maintenance of valid data, the identified procedures below will be implemented:

- Only Designated Traders can transact in the energy commodity markets as prescribed in the approved program and may only transact in energy commodity market products outlined in the hedge program.
- Designated traders may only transact within limits approved and defined in this program.
- All energy commodity hedge transactions will be recorded and documented.
- Metrics for assessing market risk exposure will be specified, measured, monitored, and reported on a regular basis.
- All hedge transactions will be captured in the City's financial records.

3.01 Contract Negotiation

The Manager of Energy Marketing & Business Analysis with the assistance of the City Solicitor is responsible for negotiating and executing (signed by City Clerk and Mayor) hedge transaction governing agreements with energy commodity suppliers or market exchanges. The City Manager must approve all final agreements prior to execution.
The negotiation process will take place prior to actual energy commodity forward purchase or sales arrangements to provide the most flexibility possible.
It is also the intent to have at least two providers with approved governing agreements in place prior to awarding forward purchase or sales contracts in order to ensure competitive pricing. In addition, existing contracts will be monitored for expiration terms and either renegotiated for extension or issued up for bid in a timely manner by the Manager of Energy Marketing & Business Analysis with the support of the Finance group.

3.02 Market Monitoring and Execution Steps

The designated traders will monitor energy commodity market movement on a daily basis for the execution of value forward purchasing/selling to for revenue stabilization or asset optimization limits within the time parameters as approved in the current hedge program. Monthly meetings will also be held between the front and middle office representatives to discuss current markets and the current status of the hedge program to set targets.
When target levels are hit, hedge positions will be sought with approved counterparties. If any counterparty is not currently on the list, a new evaluation will be conducted. The approved counterparty credit report will also be reviewed to guide Designated traders in contract assignment to prevent against the potential of portfolio concentration risk.

3.03 Transaction Confirmation and Capture Process

Once forward sales contracts have been negotiated and finalized, Manager of Energy Marketing & Business Analysis and the City Treasurer will both be responsible for verifying the terms of the deal against confirms received directly from the counterparty. The Middle/Back Office will be responsible for forwarding the approved confirmation to the counterparty and for entering the transaction data into the tracking system for monitoring ongoing exposure.

For each transaction, at a minimum, the following data will be created:

- Hedge trigger point
- Trader and counterparty
- Commodity, trade date, purchase/sale, volume, price and delivery period

3.04 Bill Audit Process

The Middle/Back Office will be responsible for monitoring monthly invoice data to identify and address any discrepancies that need correcting.

4. <u>REPORTING</u>

Reports required by this program to communicate the market and credit risks assumed by the Electric Generation business unit and provide information to evaluate the portfolio performance and the effectiveness of the hedging program.

The reporting structure as outlined in Section 7 Reporting in the Corporate Policy Hedge Guidelines will be followed in the ongoing operation of the Electric hedge program.

Management reporting will act as a formal means of communicating the performance of energy commodity hedge transactions. On an ongoing basis, management and staff must also establish sufficient communications among parties with responsibilities relative to this program.

The following table identifies the reports that will be generated, their normal frequency, distribution, and the originator of the report:

Report	Distribution	Normal Frequency	Originator
Mark-to-Market Position Report	ROC/OG Front Office	As requested	Middle/Back Office
Variance to Budget Report	ROC/OG Front Office	Quarterly	Middle/Back Office
Approved Counterparties	ROC/OG Front Office	Quarterly	Middle/Back Office
Electric Trading Report	ROC	Quarterly	Front Office
Credit Risk Exposure Report	ROC/OG Front Office	Monthly	Middle/Back Office
Limit Exception Reporting	ROC/OG Front Office	As Incurred	Middle/Back Office
ROC/OG Meeting Minutes	ROC/OG	As Meetings Held	City Clerk OG Designated Secretary
Risk Management Activities	City Council Corporate Services Committee	Annually	City Manager

5. PROGRAM REVIEW

As noted in Section 8 Program Review in the Corporate Policy Hedge Guidelines, following approval of this Electric hedge program, the ROC will periodically review the program and recommend updates as appropriate as provided by the OG.

ELECTRIC HEDGE PROGRAM METHODOLOGY

OVERVIEW

The City Electric Generation and Energy Marketing & Business Analysis groups are responsible for efficiently managing the City's generation assets to ensure a reliable supply of power while improving plant sustainability and providing an annual dividend to the City. As a means to support these objectives they are looking to mitigate price and volumetric risk and optimize any excess capacity from generation assets in a structured and City Council approved hedge program.

ELECTRIC HEDGE STRATEGY SYNOPSIS

The ELECTRIC Hedge Program encompasses three main strategies to enhance the City's marketing efforts, protect margins and optimize assets:

(1) Protect margin for a portion of demand from the City's large commercial/industrial class

(2) Lock in margin for a portion of demand from the City's Regulated Rate Option customer class

(3) Optimize the City's assets when excess capacity can be sold at a favorable margin and when power may be purchased at a more reasonable cost than internal generation.

ELECTRIC Hedge Strategy Controls:

- For each of these strategies set parameters around execution rationale as well as allowable horizon, volumes and tools dictate when hedges may be established and such limits must be approved by the ROC.
- Historical margin levels as far back as the last 4 years have been calculated using a conservative heat rate conversion and historical power prices along with known operational costs and revenue premium to quantify when margin value is present.
- Authorized hedge volume levels will be capped at 60% of estimated demand.
- The authorized hedge horizons are structured to meet the nature of that given strategy.
- The Commercial/Industrial class has the ability to lock in prices for a longer duration while the RRO class and asset optimization strategies will entail a shorter time frame.
- Acceptable tools have been specified under each strategy as have allowable counterparties.
- When possible the ELECTRIC strategy will work in conjunction with the Natural Gas and Petroleum Resources business unit to synergize natural gas supply/demand or to coordinate on counterparties to better mitigate and monitor credit risk.
- For any established hedges, Medicine Hat will manage and reposition supply under these hedges as operational needs dictate.
- An annual review of the ELECTRIC hedge program is mandatory (the City may consider different margin levels and associated volumes, different tools or change durations as the program matures).

STRATEGY PARAMETERS

STRATEGY 1 – Fixed Price Commercial/Industrial Customer Protection

STRATEGY 1A

Purpose: Hedge default pool price for large commercial/industrial load by selling pool price and buying gas to lock in margin on this customer class.

Trigger: Margin level range from 10% - 50% or greater will drive the associated volume secured.

MARGIN RETURN		
4th Quadrant	79%	136%
3rd Quadrant	39%	79%
2nd Quadrant	19%	39%
1st Quadrant	-8%	19%
Mean	48%	
Median	39%	
DIFFERENTIAL/PROFIT		
4th Quadrant	$64.31	$110.93
3rd Quadrant	$31.29	$64.31
2nd Quadrant	$12.14	$31.29
1st Quadrant	-$6.89	$12.14
Mean	$38.20	
Median	$31.29	

Note - Margin level was calculated using a HR of 9 and incorporating fixed costs as well as the revenue premium+ capacity from roughly 2010 - 2014. The margin return incorporated a 10% ROE budgeted assumption of $8.18 MWh.

Volume: Proposed scaled in volume % as illustrated in the table below based on level of ROI protection achievement:

Based on data provided by Medicine Hat, the historical median margin level from 2010 to 2014 was roughly 40%.

This is contingent on the volume from this rate class being large enough to be able to find a market.

Volumes will vary contingent on several factors such as weather which is why 60% is the recommended volume cap. Estimated load is about 50,000 MWh per year (as of 9-23-15)

Return Margin	Hedge Volume Range
50% or greater	50% to 60%
30% - 50%	40% to 50%
20% - 30%	30% - 40%
10% - 20%	20% - 30%
0-10%	Up to 20%

Horizon: Up to 12 months

Tool(s): Simultaneous NG Purchase and Power Pool Price Sale using NG Financial Swaps or Options and AESO 24/7 Flat Financial Power Products

Counterparties: Banks, Direct Energy, or other suppliers with liquidity
Note — the Default Pool Price is posted for each hour in the day, is averaged by day and then averaged by month.

STRATEGY 1B - Time of Use Contracts

Purpose: Establish new fixed-price large commercial/industrial customer deals with known natural gas cost input to lock in a known and approved margin. Will need to cover any existing fixed price customers (about 140,000 MWh/year) as first priority.

Risk: This particular product offered by Medicine Hat whereby the customer can fix the price without making any type of volume commitment introduces a high degree of varying risks, including volumetric and price risk. Medicine Hat is immediately exposed to provide power at a set price without a secured volume or known margin. In essence taking no hedge action may be a riskier position than maintaining an unprotected position, but without a volume commitment Medicine Hat also faces the risk of hedging too much. The best solution would be to revisit this product offering and require a Take or Pay Provision giving Medicine Hat a volume commitment in determined contract duration at the time the price is fixed.

Trigger: Contingent on margin levels at the time of fix. If margin is negative then options tools need to be utilized. If a favorable margin is present then fixed NG purchases may be scaled in.

Volume: Volume level is not secured at time of contract- Medicine Hat is highly interested in adding a Take or Pay provision to its fixed sale power contracts (up to 80%) to add some volume certainty

Because of the unknown volume the recommended volume cap is no more than 50% of projections or alternatively up to the Take or Pay Provision volume if incorporated:

Return Margin	Hedge Volume Range
20% or greater	Up to 50% - fixed
0-20%	Up to 25% - fixed
Negative Margin	Up to 50% - options

Horizon: Hedge will match the duration of the executed contract up to a year

Tool(s): As noted above - Contingent on margin levels at the time of fix. If margin is negative then options tools need to be utilized. The option premium spend will be no more than 5% of the gas cost.

If a favorable margin is present then fixed NG purchases may be scaled in as illustrated in the table above.

Poor gas/power product correlations and physical import restrictions limit Medicine Hat's availability to use physical power as a tool to lock in the power premium at the time of the fixed sale.

Counterparties: Banks, Direct Energy, or other suppliers with liquidity.

STRATEGY 1C - Long Term Fixed Price Contracts

Purpose: Establish new long term fixed-price large commercial/industrial customer deals with known natural gas cost input to lock in a known and approved margin.

Risk: CMH will offer customers contracts bases on estimated costs including a return. CMH will purchase fixed price gas to back stop these offerings and lock in the margin. However, with these deals there will be credit risk with the counterparty and volume risk depending on the take or pay parameters.

Trigger: The CMH will price in a 10% return on these long term contracts.

Volume: Medicine Hat will require a Take or Pay provision to its fixed sale power contracts (90-110%) to add some volume certainty.

Return Margin	Hedge Volume Range
10% or greater	90%-100% - fixed

Horizon Tool(s)

Hedge will match the duration of the executed contract up to 3 years.
Fixed NG purchases will be used to lock in the profit margin that is priced into the contract offering at the time of signing.

Counterparties Banks, Direct Energy, or other suppliers with liquidity

STRATEGY 1D - Customer Hedging (flow-through)

Purpose: Assist CMH contracted customers to manage floating natural gas price exposure by locking in a portion of their volumes.

Risk: CMH will act as an intermediary for the customer to execute the hedge, therefore, CMH is exposed to counterparty credit risk. To mitigate this risk, CMH will obtain credit support from the customer in the amount of the potential credit exposure calculated as a minimum 1 standard deviation change in prices. CMH will charge a $0.05/GJ charge for administration. The credit support will be in the form of a cash deposit or an irrevocable Letter of Credit (LOC).

Trigger: On written advice from an authorized representative of the contracted customer CMH will obtain quotes from the market and execute the trade on behalf of the customer.

Volume: Hedged volumes will be at customer's request up to 80% of the customer's expected usage.

Horizon: Hedge term will be the lessor of the customer's contract length or CMH's approved hedge time horizon (3 years).

Tool(s): Fixed financial natural gas purchased will be used to lock in customer's cost of fuel on the hedged amount.

Counterparties: Approved ISDA counterparties.

STRATEGY 2 - Short-term Regulated Rate Option (RRO) Customers - Natural Gas Input Cost Management

Purpose: Protect a portion of the City's margin by hedging natural gas input costs for the next 30 days against the first of the month RRO

Trigger: Margin level range from 10 % - 50% or greater will drive the associated volume secured Based on data provided by Medicine Hat, the Historical average margin level for 2011 through mid-2015 was roughly 40%.

Note - Margin level was calculated using a HR of 9 and incorporating fixed costs as well as the capacity revenue charge.

Volume: Proposed scaled in volume % as illustrated in the table below based on level of ROI protection achievement:

Volumes will vary contingent on several factors which is why 60% is the recommended volume cap. Volume is anywhere from 37,000- 51,000 MWh per month. GJ input volume estimated at 450,000/month.

Return Margin	Hedge Volume Range
50% or greater	50% to 60%
30% - 50%	40% to 50%
20% - 30%	30% - 40%
10% - 20%	20% - 30%
0-10%	Up to 20%

Horizon: One month out/ the Prompt Month.

Tool(s): Long NG - Financial Swap/Options + Physical Fixed/Options Banks, Direct Energy, or other suppliers with liquidity.

Note - the RRO price is determined 2 days prior to the beginning of the next month. It is based on the average of the 10 Default Service Providers forecasted price for that prompt month. The City would hedge in that 2 day time frame.

STRATEGY 3 - Short-term Asset Optimization

STRATEGY 3A

Purpose: Hedge a portion of excess peaking capacity (exports) when the market price protects a gross margin target.

Trigger: Gross Margin level range from $7.50 or greater will drive the associated volume secured. Short-term nature and known pricing structure allows for a more aggressive volume at the associated margin level.

Volume: Cap for hedged volumes will be calculated for available capacity utilizing the previous year peak for the given month (making adjustments for any major changes to City load), minus planned outages, and adding the Cancarb PPA. If the City has a resource which has become inoperable (including Cancarb), then the volume calculation must be adjusted accordingly. Also, any existing hedge positions will be closed out if the City has a resource(s) that becomes inoperable to ensure Electric Generation stays in the ranges of the table below. Peak demand month estimates result in anticipated range of 47 to 88 MW for hedgeable volume.

Proposed scaled in volume % below based on level of ROI protection achievement:

		Return Margin				
		$7.5-$10	$10.01-$15.00	$15.01-$22.50	$22.51-$30	$30 and up
Time Period	Balance Month	0%-15%	10%-25%	20%-35%	30%-45%	40%-60%
	Next Month	0%-15%	10%-25%	20%-35%	30%-45%	40%-55%
	Up to 6 months	0%-10%	5%-15%	10%-25%	20%-35%	30%-45%
	Up to 2 years	0%-10%	5%-15%	10%-20%	15%-25%	20%-30%

Return Margin – Sales Price – Fuel – Carbon – Variable O&M - PILOT

Horizon: Greater than real-time and up to 2-years out. Real-time is defined as any days where Electric Generation is bidding the physical power into the AESO market and could be up T+5 days depending on weekends and trading holidays.

Tool(s): On Peak, Off Peak or ATC (around the clock) using financial swaps or spark spread options. The City will sell power and simultaneously purchase gas volume equivalent to the anticipated physical run-time to optimize the hedge which may be less than the total power volume. The expected physical run-time will be calculated using the latest hourly EDC forecasted power price and NGX gas forward curve.

Counterparties: Direct Energy, Rainbow, RBC, NBC, or other approved ISDA counterparties.

STRATEGY 3B

Purpose: Reduce the City's cost when purchased off-peak power products can be imported at a lower price than internal generation.

Trigger: Purchased off-peak power price is lower than internal generation cost.

Volume: If savings are greater than $0 then purchase, plus a premium of $2 for the cost of switching, up to 50% of off-peak requirements (26 MW cap) can be hedged given minimum stabilization production is protected.

Horizon: Up to 90 days out

Tool(s): Off-Peak Power - Physical Fixed/Options or Financial Swaps/Options

Counterparties: Banks, Direct Energy or other suppliers with liquidity

**For any established hedges, Medicine Hat will manage and reposition supply under these hedges as operational needs dictate.*

AUTHORIZED PERSONNEL

Title

Manager of Energy Marketing & Business Analysis; Energy Marketing Specialist

Note - Managing Director, Energy, Land & Environment has the authority to appoint a designee in the absence of the Manager of Energy Marketing & Business Analysis

The Credit Risk Policy (see Appendix D) applies to the Electric Hedge Program

APPENDIX D

CREDIT RISK MANAGEMENT POLICY

1. CREDIT RISK DEFINITION

1.01 Credit risk is defined as the risk of counterparty non-performance, or failure to deliver on financial obligations (whether that is a payment of amount owed or a commodity).

2. OVERSIGHT AND ACCOUNTABILITY

2.01 ROC approves credit policy guidelines and oversees the policy's implementation.

2.02 The Middle Office/Treasury Department is responsible for:
2.02.1. Initial and ongoing credit approval within ROC approved guidelines;
2.02.2. Coordinating enabling agreement documentation;
2.02.3. Monitoring ongoing exposure;
2.02.4. Reporting on counterparty risks

2.03 Front Office/Trading Group is responsible for introducing new counterparty requests to the Treasury Department and seeking approval to transact with these parties.

2.04 City Solicitor provides assistance in relation to agreement negotiations.

3. CREDIT EVALUATION PROCESS/ METHODOLOGY

3.01 Counterparty Credit Scoring and evaluation.

3.01.1 The Back Office/Treasury Department, with the help of the Front Office, will maintain a list of approved counterparties. - This is a list of existing or potential counterparties that require periodic credit review and monitoring. This list should be reviewed and approved by the ROC as part of the ROC quarterly meeting.

Timing -the credit evaluation should take place at least quarterly. Each issuer that is associated with recent noteworthy credit news or a downgrade should be monitored on as needed basis. BBB-rated counterparties will be monitored monthly. The Treasury Department will consolidate all known credit exposure to each counterparty organization. Reporting counterparty risks should be done quarterly to the OG, or more frequently, depending on any credit risk developments. OG will determine if a credit risk report should be presented to the ROC.

3.01.2 Methods of credit evaluation:

The following methods will be used to evaluate the credit strength and financial stability of counterparty organizations:

3.01.2.1 External credit ratings from the following well reputed credit agencies:
Moody's, S&P, Fitch, DBRS, Morningstar Investment Services will be used. The following rating scales will be utilized (S&P and equivalents):
AAA
AA+
AA
AA-
A+
A
A-
BBS+
BBB
BBB-
BB+, BB, BB-, B+, B, B-, CCC ratings represent "speculative investment grade".
AAA, AA, A, and BBB ratings represent "investment grade".

3.02 Guidelines for approval or denial of credit

3.02.1 The CMH will grant "zero" unsecured credit limit to issuers rated BB+ or lower (S&P scale and equivalents). For guidelines regarding secured transactions, please refer to paragraph 3.05.

3.02.2 In the event that the issuer/counterparty is not credit-rated or is not a publicly traded organization, the alternatives under paragraph 3.05 should be followed.

3.0. Credit-limit scale - based on CMH risk tolerance level.

3.03.1 The maximum unsecured credit exposure per single issuer that the CMH is willing to accept is $10 million for AAA-rated issuers. For each lower grade of credit quality, this maximum limit will be reduced per the below schedule. The stated limits in this schedule show the maximum possible credit to be granted per entity, but may be reduced based on credit analysis criteria listed under paragraph 3.04:

AAA - up to $10 million unsecured credit exposure
AA+ - up to $8 million unsecured credit exposure
AA - up to $6 million unsecured credit exposure

AA- - up to $5 million unsecured credit exposure
A+ - up to $4 million unsecured credit exposure
A - up to $3 million unsecured credit exposure
A- - up to $2 million unsecured credit exposure
BBB+ - up to $1 million unsecured credit exposure
BBB - up to $0.5 million unsecured credit exposure
BBB- - up to $0.2 million unsecured credit exposure (in addition to regular quarterly reviews, monthly credit news monitoring is required).

Note that the above exposure limits represent a consolidated receivable exposure for the CMH to a single entity across the organization but excluding pool-managed investments held with external managers or internally managed fixed income investments, which are governed through Investment Policy 0167.
The maximum credit exposure across all hedging counterparties shall not exceed $10 million at any one time.

3.04 Select methods and instruments of evaluation include but are not limited to:

3.04.1 Periodic/timely review of corporate credit news related to tracked counterparties
3.04.2 Credit Rating Agency Reports
3.04.3 Evaluation of the counterparty's recent payment history with the City
3.04.4 Financial Statements evaluation
3.04.5 Financial ratios/metrics (requiring reviewer's prudent judgment) such as:

- Debt / EBITDA (preferred <= 2 x)
- EBITDA / Interest (preferred >= 2.5 x) [if there is a significant increase in interest rates, use 3.0 x]
- Debt / Equity (preferred<= 2 x)
- Cash Flow Ops / Total Debt (preferred >= 1 x)
- Current Ratio (preferred >= 1 x)
  (Note: the above ratio averages are only a guideline. Each industry has its distinctive ratio averages. When reviewing the financial strength of a company, comparison to industry average ratios is preferred where such ratios are available. Review of ratio trends is also important. Ratios are only one component of credit quality evaluation).

3.04.6 Composition and maturity of corporate debt (distribution of debt maturity and evaluation of near-term large maturities/payments).
[Access to debt maturities distribution is available through Morningstar/Bonds for each issuer. Alternatively, the issuer's financial statements must be examined].

3.04.7 Altman Z-Score (likelihood of default regression analysis)

Z-Score	**Forecast**
Above 3.0	Bankruptcy not likely
1.8 to 3.0	Bankruptcy cannot be predicted-Gray area
Below 1.8	Bankruptcy is likely

Altman Z-score Bankruptcy Calculator:
https:l/www.easycalculation.com/statistics/altman-z-score.php

3.04.8 Financial/credit guarantees (for each credit guarantee, care must be taken not to be too heavily weighted with any one bank):

3.04.9 Request a letter of credit (LOC).
A letter of credit is an obligation taken on by a bank to make a payment once certain criteria are met. Although CMH will consider LOC instruments issued by investment-grade US national banks, CMH will always prefer that the LOC be issued by an investment- grade Canadian chartered bank, or by an investment-grade Canadian subsidiary of a US or national chartered bank.

3.04.10 Request a bank guarantee.
(A bank guarantee, like a letter of credit, guarantees a sum of money to a beneficiary. Unlike a letter of credit, the sum is only paid if the opposing party does not fulfill the stipulated obligations under the contract.)

3.04.11 Reduce current exposure to the counterparty

3.04.12 Request a corporate guarantee.
Corporate guarantee is used when a corporation agrees to be held responsible for completing the duties and obligations of a debtor to a lender, in the event that the debtor fails to fulfill the terms of the debtor-lender contract. The guarantee is as good as the credit quality of the guarantor organization.

3.04.13 Demand accelerated payment within the contract, for future transactions and in certain situations. For instance, City of Medicine Hat credit terms are net-30 days. If there is a delay in receivables due to the City, an accelerated payment clause should come in effect. Any enabling agreement documentation (between the City and any counterparty organization) should contain such accelerated payment clause, and/or requirement for other financial guarantees, in an event of payment delays to the City.

3.05 Where the credit score of the counterparty has deteriorated to the point where preemptive action is required, combination of the above options should be pursued.

3.06 The OG/ROC will be informed immediately about negative credit news related to issuers and OG/ROC guidance will be sought as to whether further credit exposure should be limited or credit protection pursued.

4. Credit Risk Reporting

4.01 Middle Office / Treasury Department will mark to market any open hedging positions within a monthly Mark-to-market report.

4.01.1 This report will be updated monthly to show:
The contract agreement number, the counterparty entity, the current credit rating of the counterparty, the effective period, description of the

security, notional amount hedged, the department involved in hedging, the intrinsic valuation of the security, the realized gain/(loss) on the security, and the premiums paid.

4.01.2 On a quarterly basis, the report will also show the bank-originated mark-to-market financial instrument valuation as at the last day of each quarter.

APPENDIX E

FOREIGN FXCHANGE (FX) RISK MANAGEMENT

1. FX RISK DEFINITION

   i. Foreign exchange risk results from potential changes in foreign exchange rates between the dates when a transaction is budgeted, procured, or invoiced and when it is settled.

2. OVERSIGHT AND ACCOUNTABILITY

   a. ROC and OG are tasked with approving Foreign Exchange Risk Management guidelines and overseeing the Program implementation.

   b. The Middle Office/ Treasury Department is tasked with:
      i. Collaborate with Front Office and departments in confirming the FX exposure and deciding/ prioritizing which FX exposures will be hedged and which not, based on ROC approved guidelines;
      ii. Initial approval to enter in FX hedging transactions or strategies within ROC approved guidelines;
      iii. Coordinating enabling agreement documentation if required;
      iv. Monitoring ongoing FX exposure for any FX hedged positions;
      v. Reporting on FX-related risks and measuring effectiveness of FX hedging procedure.

   c. Front Office/Trading Group is tasked with:
      i. Introducing new FX hedging proposals to the Treasury Department and seeking approval to enter into such FX hedging transactions;
      ii. Referencing historic FX prices, FX forward rate forecasts, FX volatility, and other forecasting tools, when designing FX risk mitigation strategies that are compliant with ROC approved guidelines;
      iii. Deciding/prioritizing which FX exposure will be managed within the respective business unit (i.e. Gas Production/Electric Generation). Adjusting the business unit's exposed position through measures consistent with the policy's stated objectives. This involves choosing the appropriate strategies/hedging instruments (listed under paragraph 7), as well as the timing of execution.

   d. City Solicitor will provide assistance in relation to agreement negotiations as required.

3. OBJECTIVE

a. The financial objective of this Foreign Currency Risk Management Program is to:
   i. take reasonable steps to minimize uncertainty or losses resulting from foreign currency transaction exposure,
   ii. lock-in capital and operating FX denominated budget assumptions and economics as approved by Council.

4. IN-SCOPE: WHAT AND WHEN TO HEDGE

a. CMH will hedge its FX exposure in the following circumstances and at the following trigger points:
   1. Budgeted/Council-approved capital FX-denominated expenditures of $500,000 or more:
      i. Timing: the hedge will proceed if there is reasonable assurance, communicated via email or signed paper copy, from the department director (or authorized delegate) to the Middle Office, that the future purchase/contract amount will take place at a specified date (i.e., the future date the City will pay its FX liability), and be settled in a FXcurrency. The ROC may authorize to enter a hedge even where the specified date is not readily determinable;
      ii. If there is no such reasonable assurance as to timing, amount and currency of such transaction, the Middle Office will wait for the approved Purchase Order to be issued first and then pass this information to the Front Office, who will then execute the FX hedging trade, following ROCapproved guidelines/parameters;
   2. Council-approved debenture borrowing bylaw amounts that have been approved through all three Council readings, are earmarked for FX-denominated expenditures of $500,000 or more:
      i. Timing: the hedge will proceed if there is reasonable assurance, communicated via email or signed paper copy, from the department director (or authorized delegate) to the Middle Office, that the borrowed amount (or part thereof) will be used to fund a FX-denominated liability on a future specified date for a specified amount (date and amount to be included in the correspondence). The ROC may authorize to enter a hedge even where the specified date is not readily determinable;
      ii. If there is no such reasonable assurance as to timing, amount and currency of such transaction, the Middle Office will wait for the approved Purchase Order to be issued first and then pass this information to the Front Office, who will execute the FX hedging trade, following ROC approved guidelines/parameters.
   3. Awarded purchasing contract over $500,000, denominated in FX currency, approved by both the City and the vendor, and having an issued Purchase Order:

i. Timing: hedge the FX exposure immediately after contract has been awarded and simultaneously inform the Purchasing Department and the director of the department administering the contract.

4. Budgeted/Council-approved operating FX-denominated expenditures of $500,000 or more:
   i. Timing: the hedge will proceed if there is reasonable assurance, communicated via email or signed paper copy, from the department director (or authorized delegate) to the Middle Office, that the purchase/contract will take place at a specified date, amount, and in FX currency. The ROC may authorize to enter a hedge even where the specified date is not readily determinable;
   ii. If there is no such reasonable assurance as to timing, amount and currency of such transaction, the Middle Office will wait for the approved Purchase Order to be issued first and then pass this information to the Front Office, who will then execute the FX hedging trade, following ROCapproved guidelines/parameters.

5. <u>OUT-OF-SCOPE</u>

The following balance sheet positions and cash flows will not be hedged:

i. Gas Production oil and gas reserves and related sales (other than hedge positions denominated in foreign currency).
ii. Electric Generation foreign currency revenue streams (other than hedge positions denominated in foreign currency).
iii. Approved capital or operating budget expenditures below $500,000.
iv. Foreign currency exposure related to externally managed treasury investments, for whom foreign currency. exposure is part of an integrated portfolio management model .
v. When the estimated FX hedge costs exceed the expected FX loss on the transaction.
vi. When the City has identified a natural FX hedge that offsets the FX exposure.
vii. When suitable hedging instruments are not available on the market and outright purchase of foreign currency is not preferred (due to making large amounts of cash unavailable for other use).

a. FX hedging will be used only as a risk-management tool for existing City contracts. CMH will not enter in stand-alone FX contracts as a means of speculation on FX rates.
b. Bid/ask spread costs should be considered when calculating hedge costs.

5. STRATEGIES AND HEDGING INSTRUMENTS

Strategies and hedging instruments to manage foreign exchange risk include:

- Avoid/side-step the currency risk where the risk is considered too high, by not entering in the transaction that gives rise to FX exposure;
- Whenever possible, requiring that the counterparty enter in CAD- denominated financial instruments/agreements;
- Matching (natural hedge) involves the pairing of foreign currency inflows and outflows in terms of timing and value. The need to obtain currency in the foreign exchange market is thus reduced by timing the FX currency inflows and outflows;
- Purchase and build FX reserve. This is achieved by outright purchase of equivalent amount of foreign currency on the spot market to eliminate future FX uncertainty related to the contract;
- Utilize FX hedging instruments:
  - Forward Currency contracts to hedge FX exposure, non- deliverable FX Forward contracts are cash settled at the expiration of the contract and only net difference is paid, counterparty risks must be assessed and measured throughout the life of the contract;
  - Use Currency SWAP contracts;
  - Use Currency Futures contracts;
  - Buy FX-denominated Notes or Money-market instruments, whose maturity date coincides with the specified date;
- Take no action (fully assume the FX risk exposure).

7. TIMING

Prior to entering into a FX hedging instruments, the Front Office should establish the historic perspective - looking at current volatility, historic chart and volumes, and forward forecasts (if such exist) and/or develop historical price matrices. Based on this analysis, the FX trader should consider a potential risk-reward scenario and best instrument and timing to enter in the trade. The below chart is included as an example only and outlines USD/CAD 5-year historic spot rates:

	5 Yr. USD/CAD Historic Spot Exchange Rates	
	Mean	1.2516
	Median	1.2794
	90% - MAX	1.45 to 1.50
A	80% - 90%	1.40 to 1.50
	70% - 80%	1.35 to 1.40
	60% - 70%	1.30 to 1.35
	50% - 60%	1.25 to 1.30
	40% - 50%	1.20 5o 1.25
	30% - 40%	1.15. to 1.20
B	20% - 30%	1.10 to 1.15
	10% - 20%	1.05 to 1.10
	MIN - 10%	1.00 to 1.05
		As at 01/21/2017

A. When the current USO/CAD spot price is above the 50th decile, it is recommended that the following fixed hedging methods be used: FX Swaps, Currency Forward contracts, Foreign Currency Reserves (Note: FX Reserve is defined under Item #6 on the previous page).

B. When the current USO/CAD spot price is below the 50th decile, it is recommended that the following FX hedging methods be used: Currency Futures and Currency Options (Calls/Puts/Collars).