

# 2 Year Business Plan 2017-2018 Electric Generation

Department Head: Brian Strandlund  
Title: Plant Manager  
Phone: 403-529-8213  
E-mail: bristr@medicinehat.ca

Administration | Business Services | Operations |  
Engineering | Electric and Instrumentation | Maintenance



## DEPARTMENTAL OVERVIEW

### Purpose:

- Provide a safe and reliable electricity energy supply at market competitive prices for customers within the City of Medicine Hat service area.
- Utilize excess capacity for capitalizing on revenue through sales to the power pool and ancillary services.

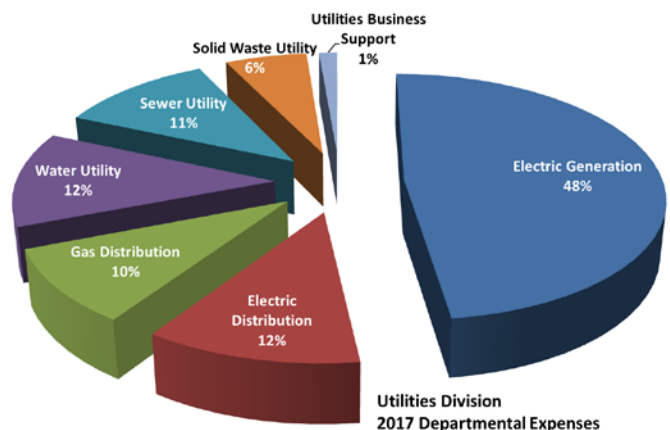
### Strategies (to achieve Key Goals):

- Increase Efficiency/Optimization through capital projects and operational improvements at the plant
- Ensure there are sufficient and talented resources available at the plant through proper Succession Planning
- Evaluate potential of Future Developmental Opportunities such as: new generation and improved flood mitigation projects

## SERVICES PROVIDED BY THE DEPARTMENT INCLUDE:

Generate electricity to meet the capacity and energy needs of customers located in the City's service area at competitive rates

1. Provide a financial benefit in the form of a dividend to the City.
2. Supply Water Treatment plant with mechanical resources as required.
3. Supply ARS/CIP compliance management to Electric Distribution.



**TABLE OF CONTENTS**

---

**Department Overview**

Corporate Mission Statement..... 3  
Department Organizational Chart..... 3  
Core Services and Customers ..... 3  
Current Year Service Highlights and Achievements..... 4  
Significant Issues and Trends ..... 5

**Department Plans**

Council Strategic Plan, Strategic Priorities, Key Results and Key Performance Indicators  
Electric Generation ..... 6

**Financial Plan Summary & Highlights..... 9**

**2014-2018 Council Strategic Priorities and Key Results..... 12**

**Attachments**

Attachment A – TCA Decision Packages ..... 14

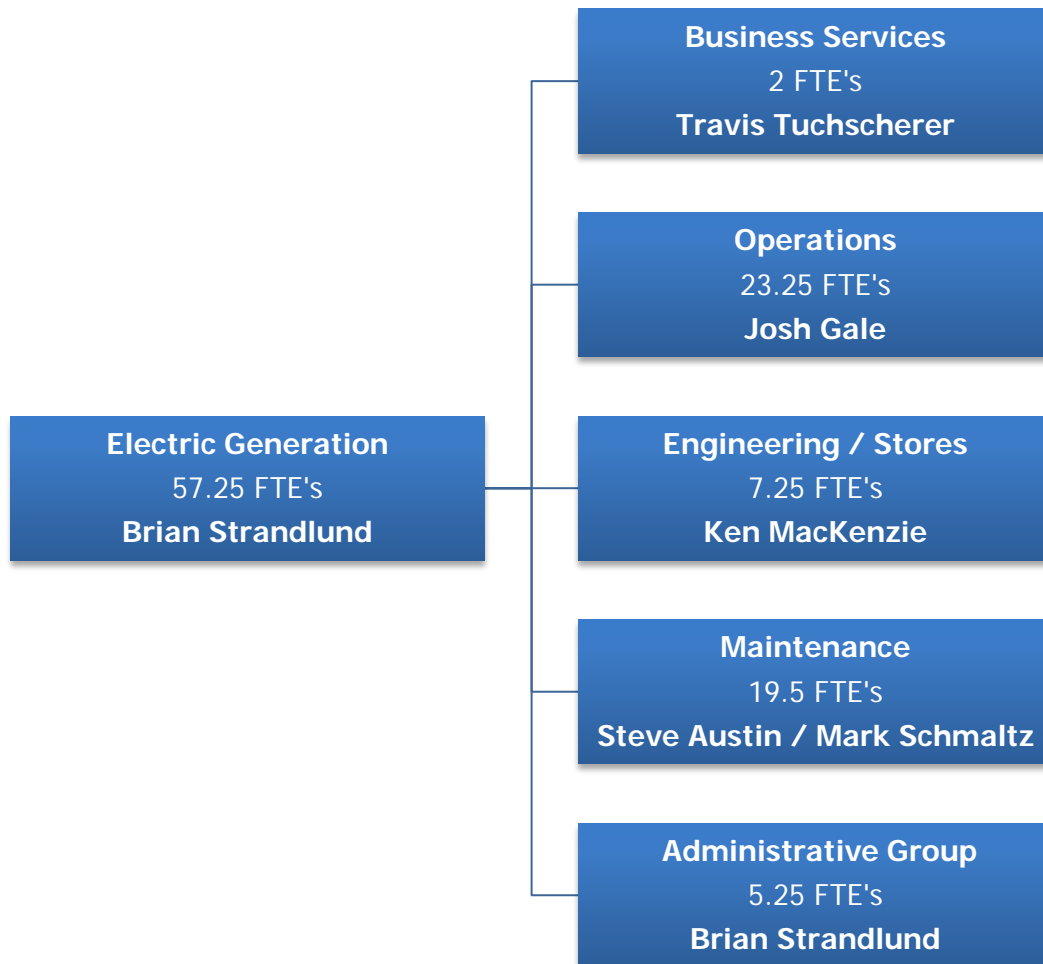
## DEPARTMENT OVERVIEW

---

### Corporate Mission Statement

*“Deliver value through exceptional public service.”*

### Organizational Chart



### Core Services & Customers

- Indirect, external – Electrical customers located in the City’s service area.
- Direct, internal – Environmental Utilities - Water Treatment Plant (power supply, steam, mechanical trades, office, warehousing, site safety & security), Electric Distribution (supply power for City load).
- Direct, external – Alberta Electric System Operator (AESO) and Market Surveillance Administrator (MSA) regulatory authorities for ancillary services and power sales), Cancarb executed power purchase agreement.

## **2015 / 2016 Electric Generation Service Highlights & Achievements**

- A new plant manager was recruited to fill a vacancy at the Power Plant.
- In 2015 we had no recordable health and safety incidents for our employees. To date in 2016, no employee related, recordable health and safety incidents.
- 2 minor CEMS incidents for not meeting 90% availability requirements – resulting in an external report to Alberta Environment and Parks, but no further regulatory action or follow-up.
- Moderate severity contravention of the Alberta Emissions Trading Regulation for missing the deadline for the required annual report – resulting in follow-up from Alberta Environment and Parks and revised annual report deadline.
- An Approval amendment was filed for the addition of Sprint.
- Discussed with AEP and decision was made to remove the wording from the approval to remediate the site, providing this obligation is transferred to Methanex through a land transfer agreement.
- The corporate hedging policy and the GENCO hedging plan were approved in Q2.
- There were no incidents where City load was not met.
- Electric Generations availability for 2015 was 94.25%, YTD availability in 2016 stands at 95.47%.
- **Unit 16 Generation Project:**
  - started off by the hiring of the owners construction engineer along with formalizing requirements for detailed plans and schedules for the purchasing of Long Lead equipment. Plans and schedules have been developed throughout the year and a clear path has been developed for the details of the schedule going forward along with costing. Current update is that the project is still on budget and on schedule. Construction began in June of 2016.
- **Water Treatment Plant Upgrades:**
  - were completed and on budget. This project was to bring the water treatment control system up to EPRI standards and move over to an all volatile system. The overall program was to change out softeners and equipment over to CDI units, new pumps and controllers. This was a \$785K project.
- **Unit 10 & 11 Exhaust Transition Duct Expansion Joints:**
  - were changed out. Project came in on budget (\$426k). The purpose of the fix was to Engineer out previous bad design that led to accelerated failure from degradation of expansion joint materials.
- **Upgrade 13.8 Switchyard with Metal Clad Switchgear:**
  - This project was budgeted at \$7,710M and came in at slightly over budget at \$7.81M. Reason was that some of the project was to be reallocated to the water treatment plant, but could not due to accounting restrictions.
- **Unit #15 LM6000 Engine Replacement:**
  - This project was to replace the engine unit due to being holed out. Cost was for \$7.5M, actual came in at \$6.5M. Underage was due to plant staff going out for competitive bids and pressing vendors to be competitive, this resulted in competition and we paid \$1M less for the same engine as we did the previous time.
- **SPRINT Technology-LM6000's:**
  - This project was budgeted at \$1.33M and is forecast to come in at \$1.8M. This project was initiated to increase the MW output of units 14 and 15.

- **Upgrade #14 Turbine Control System:**
  - The installation and Commissioning is scheduled for Oct 2016. The total budget assigned for this project is \$1.25M and expected expenditure by 2016 is \$1.03M.
- **Upgrade Governors for Steam Turbines #12 & #3R:**
  - Due to obsolescence of the Woodward 505E controllers, this system was upgraded to the new GE Mark6E control system along with the replacement of the exciters with 2100ex's. Budget for this was \$1.65M; forecast is to be \$1.676.
- **New Water Testing Lab:**
  - To provide a better control of water testing, and visibility to the Water Treatment Plant Upgrades, a water lab was constructed. This project was budgeted at \$240K, forecast to be \$250K.
- **Control Migration Project:**
  - The project consists of five (5) phases and includes at present the replacement of existing obsolete and matured PLCs, Network upgrades and HMI user interface improvements. Phase 1 completed and Phase 2 to be completed by end of 2016. The total project budget is \$3.7M and 2016 costs are expected to be at \$930K.
- **IT/ Process Controls Improvement Initiative:**
  - IT infrastructure and Process Control systems were found to be very lacking in security and with substandard design and equipment. Initiative was developed and executed in conjunction with Black and Veatch and Tarco System recommendations to bring these up to ISA standards and also be compliant with CIP V5 requirements.

### **Significant Issues and Trends – Electric Generation**

Opportunities/Trends/Challenges:

- Climate Change Leadership Plan (CCLP) Impacts.
- Market volatility - Gas and electric prices as well as Carbon tax increases.
- Maintain competitive power rates while achieving operations cost recovery and 10% ROE.
- Maintain marketing compliance with evolving AESO rules and changing AESO tariffs and MSA reliability standards.
- Mitigate risk of loss of single source gas supply.
- Maintain a multi-skilled work force with diminishing availability of skilled people in Alberta.
- Optimize in-house operation and maintenance organization and processes to protect the investment and ensure on-going high standards of reliability.
- Must move towards a fully supported operation and maintenance work management system (City Works).
- In 2016 a move was made to switching Insurance providers for the city. The move was to Factory Mutual as the insurance provider. This move comes with more stringent requirements from the provider, which will come with more costs to satisfy these requirements.
- Unit 16 Gas and Transmission lines are a risk to the current schedule.
- Primary Service Credit (PSC) coalition was formed to represent numerous Alberta companies to combine their resources to change the AESO Primary Service Credit calculation error. City possibly stands to make \$450K back if corrected.
- Plant continues to work with consultant on correcting the Line Loss miscalculation. Overall settlement if corrected could be between \$5M and \$10M.

**CURRENT STRATEGIES & ACTION PLANS**

**Goal:** Provide Leadership and support for the preparation and execution of a multi-year “Financially Fit” financial roadmap for the Electric Generation Facility.

**Priorities for Service Enhancement or Improvement:**

1. Review, recommend and implement power sales improvements to ensure that we are maximizing available profits. This will include the offering threshold, ancillary markets, Solar and Power boiler/Steam turbine units.
2. Successful completion and approval of the business planning and budgeting processes:
  - a. Ensure area managers/superintendents take accountability for their area budgets.
  - b. Develop and execute a monthly process to track and ensure costs are reviewed and any applicable offsets are performed to meet budget numbers.
3. Develop a Medium (3 to 5 years) and Long Range Operational Forecast to provide more accurate insight into future facility spending requirements and major equipment upgrades complete with Risk assessment.
4. Re-examine the solar system application to see if it can be re-purposed to provide a more consistent return on investment.

**Key Performance Measures:**

Target earnings of 10% return on employed equity.

**Strategy & Action Plans:**

#	SP Ref	KR Ref	Strategic Priority & Key Result & Action Plans	Who	When
1	5	5.1 / 5.3	Short term optimization for market sales/opportunities of the generation assets		
2	5	5.1	Enforce budget accountability at the power plant for all area managers.		
3	5	5.1 / 2.1	Long Range planning processes for major equipment expenditures and sustainability		

**Goal:** Human Resource Management 2017/2018

**Priorities for Service Enhancement or Improvement:**

1. Based on the results from the Employee Engagement survey, Develop and implement a plan to Improve the leadership team presence.
2. Develop succession plans for key individuals that are retiring in a few years and develop organization bench strength by training or recruitment to fulfill technical gaps.

**Key Performance Measures:**

1. Marked increase realized during next Employee Engagement Survey results.
2. KPI's (TBD) to track compliance to mandatory training, Worksite Inspections and Behavior Based Inspections.

**Strategy & Action Plans:**

#	SP Ref	KR Ref	Strategic Priority & Key Result & Action Plans	Who	When
1	6	6.1	Improved leadership and leadership involvement in driving actions for safety and culture (walk the talk)		
2	6	6.6	Succession planning and training of employees at the power plant		

**Goal:** Demonstrate commitment to corporate Health, Safety, Regulatory & Environment results.

**Priorities for Service Enhancement or Improvement:**

1. Foster an increased awareness with entire facility personnel of incorporating safety in everything we do and to Support the corporate wide metric of 3.0 TRIF rate or less.
2. Improved regulatory compliance reporting process to drive "0" reportable results.
3. Meet the October 2018 deadline for Critical Infrastructure Protection (CIP) requirements by AESO.

**Key Performance Measures:**

Plant specific KPI's and targets are to be developed to track Safety Incidents, Environmental and Regulatory Non-compliance reporting.

**Strategy & Action Plans:**

#	SP Ref	KR Ref	Strategic Priority & Key Result & Action Plans	Who	When
1	6	6.6	Develop leading indicators for GENCO to proactively understand safety performance trends and adopt corrective actions		
2	6	6.6	Formulate and implement an overall process for managing regulatory compliance reporting requirements		
3	6	6.1	Electric Generation is to perform GAP assessment and implement actions to ensure Electric Generation and Electric Distribution meet the deadline for all CIP 2018 requirements		

**Goal:** Project Management Excellence

**Priorities for Service Enhancement or Improvement:**

1. Develop and Implement an overall Project Management Program for Electrical Generation.
2. Improve budgeting for capital projects.
3. Develop project risk assessment.

**Key Performance Measures:**

Future capital projects are developed, estimated and managed to an acceptable standard.

**Strategy & Action Plans:**

#	SP Ref	KR Ref	Strategic Priority & Key Result & Action Plans	Who	When
1	6	6.1	Develop a detailed project management process by which all projects will be managed and executed by		
2	6	6.1	Develop and implement an overall Project Pre-approval process to enable GENCO to develop and pre approve projects well ahead of the budgeting cycle for review, validation and selection prior to the budgeting process. This initiative will also incorporate a long range forecast function to better plan and budget capital and heavy maintenance items to the asset life end. This process will improve cash flow leveling and long range planning		
3	5	5.2	Develop and implement a Risk management process/Matrix for assessing all types of risk for projects, maintenance and the MOC system		



## FINANCIAL PLAN SUMMARY & HIGHLIGHTS

### Departmental Operating Revenues & Expenses Summary: In Thousands of Dollars

Revenues	Prior Year Actuals 2015	Current Year Budget 2016	2017 Operating Budget	2016-2017 Change	2018 Operating Budget	2017-2018 Change	2019 Operating Forecast	2020 Operating Forecast
Sales to Retail	55,296	56,298	51,440	(4,858)	59,663	8,223	71,934	81,324
Sales to Power Pool	7,120	6,398	4,764	(1,634)	8,531	3,767	11,267	14,473
Rechargeable Projects	80	60	52	(8)	53	1	53	53
Miscellaneous Revenue	7,435	5,249	3,377	(1,872)	4,205	828	4,759	5,449
Interest Earnings	2,288	2,334	1,661	(673)	-	(1,661)	-	-
<b>Total Revenues</b>	<b>72,219</b>	<b>70,339</b>	<b>61,294</b>	<b>(9,045)</b>	<b>72,452</b>	<b>11,158</b>	<b>88,013</b>	<b>101,299</b>
<b>Expenses</b>								
Salaries & benefits	7,909	8,567	8,406	(161)	8,901	495	8,966	8,875
Other Personnel Costs	311	313	253	(60)	205	(48)	151	183
Contracted services	5,698	5,954	5,741	(213)	5,626	(115)	5,941	5,971
Materials & Supplies	1,585	2,025	1,976	(49)	2,204	228	2,586	2,657
Interdepartmental Charges	1,505	1,384	1,531	147	1,558	27	1,597	1,616
Fuel	17,433	19,333	16,117	(3,216)	17,712	1,595	18,881	20,099
Electrical Energy Purchases	7,811	9,934	11,126	1,192	10,809	(317)	10,646	9,742
Taxes	2,010	2,263	2,140	(123)	2,181	41	2,220	2,259
Interest & debt	2,240	2,015	2,425	410	2,857	432	2,568	2,428
Amortization	11,996	10,991	13,237	2,246	15,729	2,492	15,390	15,847
Payment in Lieu of Tax	2,284	1,485	938	(547)	1,651	713	1,913	2,946
Other	290	-	-	-	-	-	-	-
Transfer To/(From) Retail	325	2,710	1,215	(1,495)	(647)	(1,862)	3,456	4,447
<b>Total Expenses</b>	<b>61,397</b>	<b>66,974</b>	<b>65,105</b>	<b>(1,869)</b>	<b>68,786</b>	<b>3,681</b>	<b>74,315</b>	<b>77,070</b>
<b>Net Earnings/(Loss)</b>	<b>10,822</b>	<b>3,365</b>	<b>(3,811)</b>	<b>(7,176)</b>	<b>3,666</b>	<b>7,477</b>	<b>13,698</b>	<b>24,229</b>
<b>Dividend Contribution</b>	<b>626</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1,302</b>	<b>1,302</b>	<b>3,860</b>	<b>17,502</b>
<b>Permanent Positions:</b>		<b>47.0</b>	<b>47.0</b>	<b>0.0</b>	<b>47.0</b>	<b>0.0</b>	<b>47.0</b>	<b>47.0</b>

Increases in the current year net operating expenses are primarily due to the following factors:

1) Salaries have decreased due to a greater portion being charged to capital	(\$161,000)
2) Interdepartmental charged increased due to ICS and commissioner allocations	\$147,000
3) Fuel has decreased due to lower price and slightly lower usage	(\$3,216,000)
4) Electric Purchases increased due to increased projected imports	\$1,192,000
5) Interest expense increased due to borrowing for capital projects	\$410,000
6) Amortization has increased due to the projected completion of Unit #16	\$2,246,000
7) PILOT has decreased due to reduced sales to the pool/ancillary services	(\$547,000)
8) Transfer to retail decreased due to a tighter spread between default and the contract option	(\$1,495,000)

### **Capital Revenues & Expenditures**

The major capital projects for 2017-2018s are:

- For this budget period it is expected that GENCO will require two separate engine replacements.
  - The first engine replacement is for Unit #14 which is expected to be replaced in the fall of 2017. The expected cost to replace the LM 6000 engine is \$7 million.
  - The next engine replacement is scheduled in the fall of 2018 for Unit #10. This LM 2500+ is estimated to cost \$6.5 million.
- A capital project is in the budget for a drum level trip in the boiler feed water. This project is required for reliability reasons and to ensure the assets are operated in a manner that won't cause damage to the asset.
- Another capital project required is to replace three CEMS units on and the data logs for all the machines. This project is expected to cost \$208k.
- There is a capital project to complete the tie in of the new 8 inch gas line to the Ross Creek Station. The expected cost to have TransCanada complete this work is \$450k.
- There will also be four studies that will be capitalized to determine future requirements.
  - The first study is for the T5 transformer the will determine the asset conditions and replacement/maintenance options. This is expected to cost \$100k.
  - The next study is for the 69kv switchyard. A third party will determine the remaining life of the oil breakers and GENCO's option going forward at a cost of \$100k.
  - The third study will determine the arc flash risks at the power plant. This study is expected to cost \$45k.
  - Lastly, GENCO was requested by the insurers to perform a study to develop a deluge fire system for units #3 and #12. This project requires further development and will be updated prior to approval.

## TCA DECISION PACKAGE SUMMARY

Refer to Attachment A for detailed information on each decision package.

2017-2018 TCA Decision Packages (listed in priority order):\*

Ref.	Year	Name	\$ Capital Cost	\$ Operating Impact**	Status
5.5.3	2017	Unit #14 Engine Replacement	\$7,000,000	(\$2,448,000)	Recommended
5.5.3	2017	Drum Level Trip Sensor	\$75,000	(\$7,000)	Recommended
5.5.3	2017	CEMS replacement	\$208,000	(\$27,000)	Recommended
5.5.3	2017	T-5 study	\$100,000	(\$3,000)	Recommended
5.5.3	2017	69 KV switchyard study	\$100,000	(\$3,000)	Recommended
5.5.3	2017	Plant arc flash study	\$45,000	(\$1,000)	Recommended
5.5.3	2017	Unit #3 / #12 deluge fire system	\$100,000	(\$4,000)	Recommended
5.5.3	2017	Ross Creek Tie In	\$450,000	(\$15,000)	Recommended
5.5.3	2018	Unit #10 Engine Replacement	\$6,500,000	(\$2,274,000)	Recommended
	<b>Total</b>		<b>\$14,578,000</b>	<b>(\$4,782,000)</b>	

## 2014-2018 COUNCIL STRATEGIC PRIORITIES AND KEY RESULTS

### Strategic Priority 1:

**Economic Development:** We foster a sustainable, growing and diverse economy with a strong industrial base and a vibrant downtown.

### Strategic Priority 2:

**Infrastructure and Amenities:** We have high quality, sustainable infrastructure and amenities, and a reputation for excellent management and maintenance.

### Strategic Priority 3:

**Social Wellness:** A safe community that welcomes diversity and supports all citizens with high quality and accessible cultural, recreational and public services.

### Strategic Priority 4:

**Image and Profile:** We promote our distinctive community and excellent quality of life to our citizens and the world.

### Strategic Priority 5:

**Fiscal Management:** Responsible financial management focused on the long term ensures a sustainable city.

### Strategic Priority 6:

**City Government:** The City increasingly stands out as a well-governed and well-organized municipal corporation with a positive corporate culture.

### **Strategic Priority 1: Economic Development Key Results**

- **KR 1.1:** At least one more heavy industrial operator or major expansion of existing heavy industry occurs by December 2018.
- **KR 1.2:** A cohesive economic development strategy is completed and being implemented by December 2014.
- **KR 1.3:** The Downtown Revitalization Plan is funded and being implemented by June 2018.
- **KR 1.4:** Value added manufacturing and processing is increased by December 2016.

### **Strategic Priority 2: Infrastructure and Amenities Key Results**

- **KR 2.1:** Improve and implement an asset management plan with attention to our deep utilities and transportation network by December 2016.
- **KR 2.2:** The flood mitigation plan is fully implemented by April 2016.
- **KR 2.3:** The percentage of renewable energy production and consumption increases relative to other business growth by September 2015 and thereafter

### **Strategic Priority 3: Social Wellness Key Results**

- **KR 3.1: The river valley is developed as an aesthetic, recreational feature and as a tourist attraction by December 2018 and thereafter.**
- **KR 3.2: Appropriate river valley commercial development increases by December 2018 and thereafter.**
- **KR 3.3: Meaningful engagement opportunities for youth are developed and implemented by December 2015 and thereafter.**
- **KR 3.4: Opportunities to enhance existing green space are identified and implemented by December 2016 and thereafter.**
- **KR 3.5: Increased recreational opportunities in the south side of the city are identified and developed by December 2018.**

### **Strategic Priority 4: Image and Profile Key Results**

- **KR 4.1: Medicine Hat promotional agencies align behind a strong external brand and promote Medicine Hat with a unified external voice by December 2015 and thereafter.**
- **KR 4.2: Visitors increasingly choose Medicine Hat as a destination, and increasingly leave with a positive impression of the city by December 2014 and thereafter.**
- **KR 4.3: Citizens are increasingly positive ambassadors for Medicine Hat by December 2014 and thereafter.**
- **KR 4.4: Medicine Hat is increasingly viewed as a choice community and a great place to work, live and play by December 2016 and thereafter.**

### **Strategic Priority 5: Key Results**

- **KR 5.1: The City's healthy balance sheet provides flexibility for the future by March 2015 and thereafter.**
- **KR 5.2: A risk tolerance framework is articulated and adopted by Council by September, 2014.**
- **KR 5.3: The City's sustainable equity pool continues to produce dividends by March 2014 and thereafter.**

### **Strategic Priority 6: City Government Key Results**

- **KR 6.1: A high performance culture with clear accountabilities is in place in the City by December 2014.**
- **KR 6.2: Councilors are role models for excellence in governance by December 2014 and thereafter.**
- **KR 6.3: Increasingly efficient and effective customer-oriented service delivery is implemented in the City by December 2014 and thereafter.**
- **KR 6.4: Employee turnover is reduced and measurable increases in employee satisfaction are recorded by September 2014 and thereafter.**
- **KR 6.5: Council is a resource for strategic direction and advice to the CAO by September 2014 and thereafter.**
- **KR 6.6: The best organization structure for the City to move forward into the future is determined and implemented by December 2016.**