Saskatoon Light & Power

2016 Annual Report

City of Saskatoon
Transportation & Utilities Department

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1.0 EXECUTIVE SUMMARY

Saskatoon Light & Power is proud to serve its customers with an electrical distribution system that meets or exceeds national averages for reliability. Customer feedback obtained through the Civic Services Survey indicated that satisfaction levels regarding electrical distribution reliability remained high over the past five years and is one of the top three key strengths of the City of Saskatoon (City) (high importance and high satisfaction).

The most important performance indicator for the utility is its ability to work safely. Staff worked in excess of 229,000 hours in 2016 and recorded no lost time injuries. Their dedication to working safely and making continuous improvements to our safety program is recognized and appreciated.

The utility continues to provide a very high financial return to the City offsetting the reliance on property taxes. The total net financial benefit increased by over $618,000 in 2016 to $44.16 million. The provision to capital reserves for the utility decreased by $403,000 to $13.1 million. Increased attention will need to be spent in future years on capital spending to ensure the system is maintained at an acceptable level to ensure continued success.

Saskatoon Light & Power achieved a significant milestone in 2016 with its smart meter and Automated Metering Infrastructure (AMI) project. By the end of the year, smart meters had been provided to 73% of customers (44,500 meters). By July, the communication and computer infrastructure was in-place and the AMI system was activated. Customers with smart meters began receiving bills based on actual monthly reads eliminating the need for estimates. Installation of the remaining smart meters will be completed in 2017.

Saskatoon Light & Power continued to demonstrate a commitment to environmental stewardship by implementing an Environmental Management System meeting international standards; the first of its kind within the organization. Operation of the Landfill Gas Power Generating Station continued and a new Solar Photovoltaic (PV) Demonstration project was installed on the adjacent land. The solar project was developed in partnership with SES Solar Co-operative Ltd., Saskatchewan Polytechnic, and the Saskatchewan Environmental Society (SES). Planning for a hydropower project at the weir also continued, and an agreement was reached with the Saskatoon Health Region to study the feasibility of a Combined Heat and Power (CHP) plant at St. Paul's Hospital. Installation of energy efficient LED lighting also continued in new development areas.

Challenges exist for the utility in the future, but strategic plans are being made to address those concerns.

2.0 OVERVIEW – SASKATOON LIGHT & POWER

Saskatoon Light & Power is a municipally owned electrical utility that provides a number of services to the citizens of Saskatoon, including:

- Generation of electricity from environmentally responsible sources;
- Purchase of bulk electricity from SaskPower;
- Distribution of electricity to customers;
- Provision of fibre-optic communication connectivity for other divisions; and
- Provision of street lighting services.

2.1 Mission Statement

Saskatoon Light & Power's mandate is to provide safe, reliable, and cost effective electricity in an environmentally responsible way. We strive to minimize the number and duration of customer outages with a focus on system maintenance, staff training and safety.

2.2 Our Values

Trust
Our customers trust that we will provide them with reliable service and respond as quickly as possible to any service interruption. We earn that trust by carefully planning our work and undertaking renewal projects when needed.

Integrity
We are accountable for our actions. We publish reliability statistics and compare against other Canadian utilities when available. We respond to customer inquiries quickly and work to resolve issues.

Respect
We respect our customer's privacy by following established legislation. We work together as a multi-disciplinary team to provide a wide array of services. We rely on the technical expertise of our staff to operate a complex utility. We put safety first in everything we do, keeping in mind that our staff have families and friends that rely on them.

Honesty
We admit our mistakes and take necessary steps to prevent similar issues. We are open and honest with our customers, City Council, and the media. We listen to our customers.

Courage
Although we are a relatively small electrical utility, we take on big, complex and innovative projects. We invest our time and resources on smart projects and strive to continuously improve our services.

2.3 Our Leadership Commitments

Reliable and Responsive Service
Through the use of sound long-range planning principles, services are designed to meet future needs. Through the application of asset management principles, existing assets are maintained to meet reliability requirements. Through emergency preparedness planning, we will be ready to respond to issues when they arise.

Strong Management and Fiscal Responsibility
Saskatoon Light & Power's strategic plan aligns with the City of Saskatoon's (City) corporate strategies. Key performance indicators are measured and tracked, and meaningful, measurable and achievable goals are set.

Effective Communication, Openness and Accountability
We prepare annual reports and make them available to our customers, City Council, and our staff. We communicate with staff regularly to build and strengthen relationships and provide key information in a timely manner.

Innovation and Creativity
We work on major initiatives using a collaborative approach, often using joint committees to resolve staffing-related issues. We focus on productivity while maintaining high quality standards and never compromising safety.

2.4 Our Strategic Goals

The work of Saskatoon Light & Power aligns with the following corporate strategic goals and strategies for the long term (10 years):

Continuous Improvement

- Provide a coordinated approach to customer service with quick and accurate responses.
- Make health and safety a top priority in all that we do.
- Provide ongoing skills training and professional development opportunities for staff.
- Increase productivity by being more efficient in the way we do business.

- Leverage technology and emerging trends to reach our goals, serve citizens and connect meaningfully with our stakeholders.

Asset and Financial Sustainability

- Increase revenue sources and reduce reliance on residential property taxes.
- Reduce the gap in the funding required to rehabilitate and maintain our infrastructure.
- Adopt and implement a corporate-wide asset management and rehabilitation philosophy.

Environmental Leadership

- Create new sources of green energy where feasible.
- Reduce greenhouse gas (GHG) emissions tied to City operations.

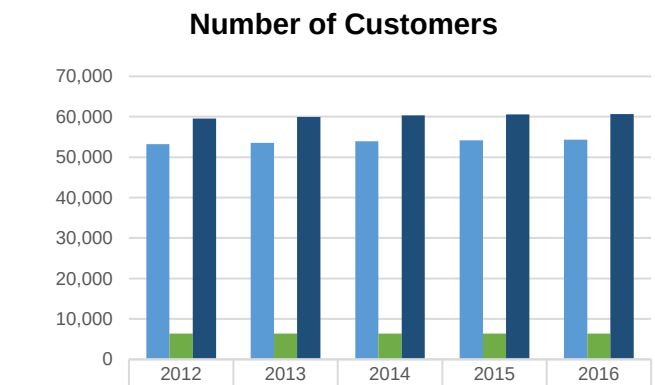
Economic Diversity and Prosperity

- Plan and invest in infrastructure needed to attract and support new businesses and skilled workers to the city.

3.0 OUR CUSTOMERS

3.1 Number of Customers

The number of customers served by Saskatoon Light & Power has grown over the past five years (1.9%), primarily due to residential growth in the Evergreen neighbourhood, which falls partially within the Saskatoon Light & Power franchise boundary. Infill development has also occurred within established neighbourhoods.



	2012	2013	2014	2015	2016
Residential	53,201	53,574	53,970	54,163	54,309
Commercial	6,371	6,360	6,375	6,391	6,386
Total	59,572	59,934	60,345	60,554	60,694

The average number of customers served in 2016 was 60,694, consisting of 54,309 residential customers (89.5%) and 6,386 commercial customers (10.5%).

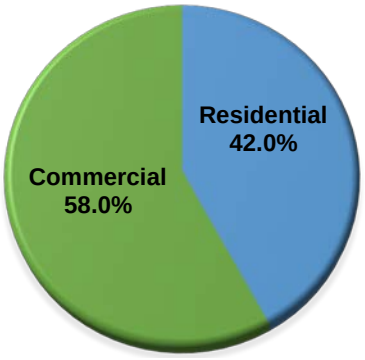
Since the utility's franchise boundaries are fixed, the majority of Saskatoon Light & Power's anticipated growth in the future will come from increased densification of the downtown core and existing neighbourhoods.

3.2 Revenue by Customer Type

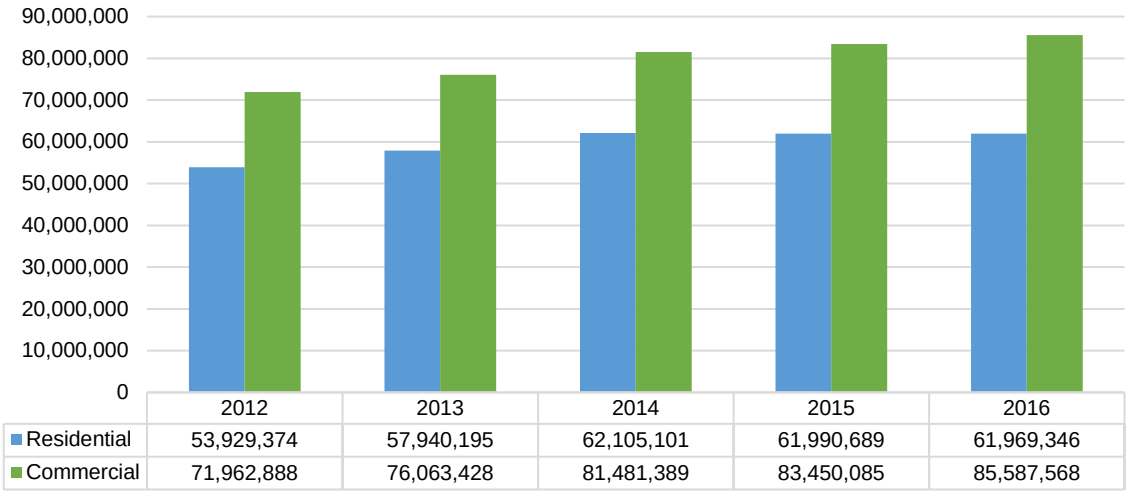
Although the number of commercial customers is much lower than the number of residential customers, consumption by commercial customers is much higher; therefore, accounts for a higher percentage of the utility's revenues.

The total amount of revenue collected from residential customers in 2016 was $61,969,346 (42%). Revenue collected from commercial customers totalled $85,587,568 (58%).

Revenue by Customer Type



Revenue by Customer Type

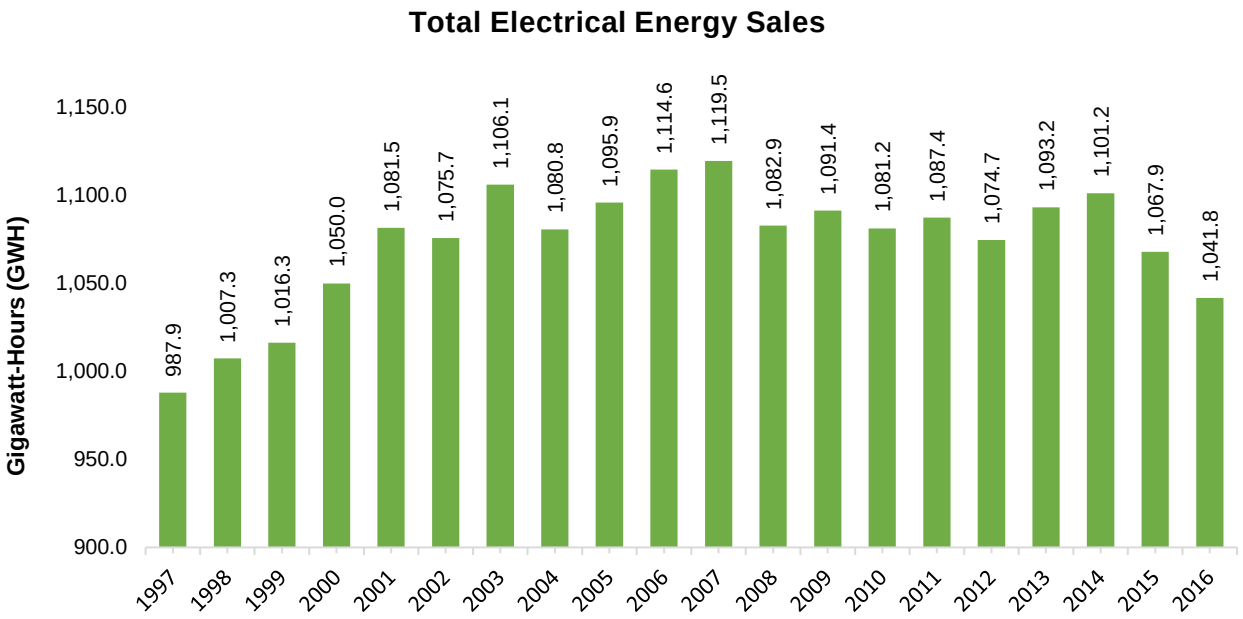


	2012	2013	2014	2015	2016
Residential	53,929,374	57,940,195	62,105,101	61,990,689	61,969,346
Commercial	71,962,888	76,063,428	81,481,389	83,450,085	85,587,568

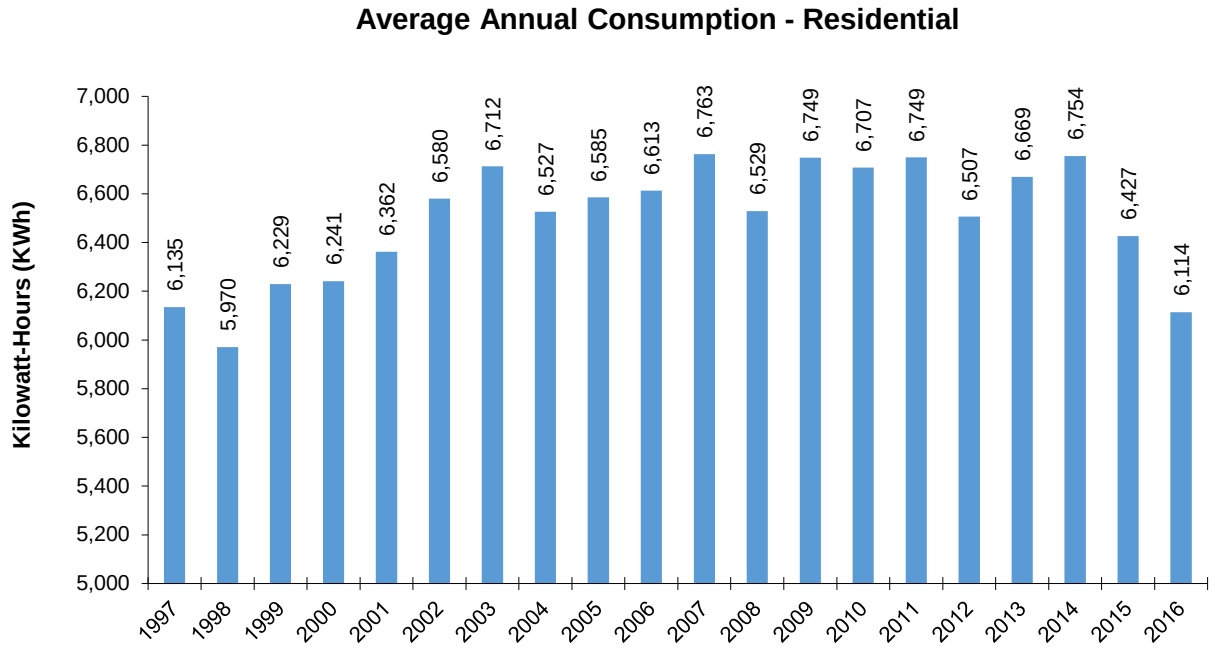
Revenue has continued to grow over the past five years primarily due to rate increases implemented by SaskPower and matched by Saskatoon Light & Power.

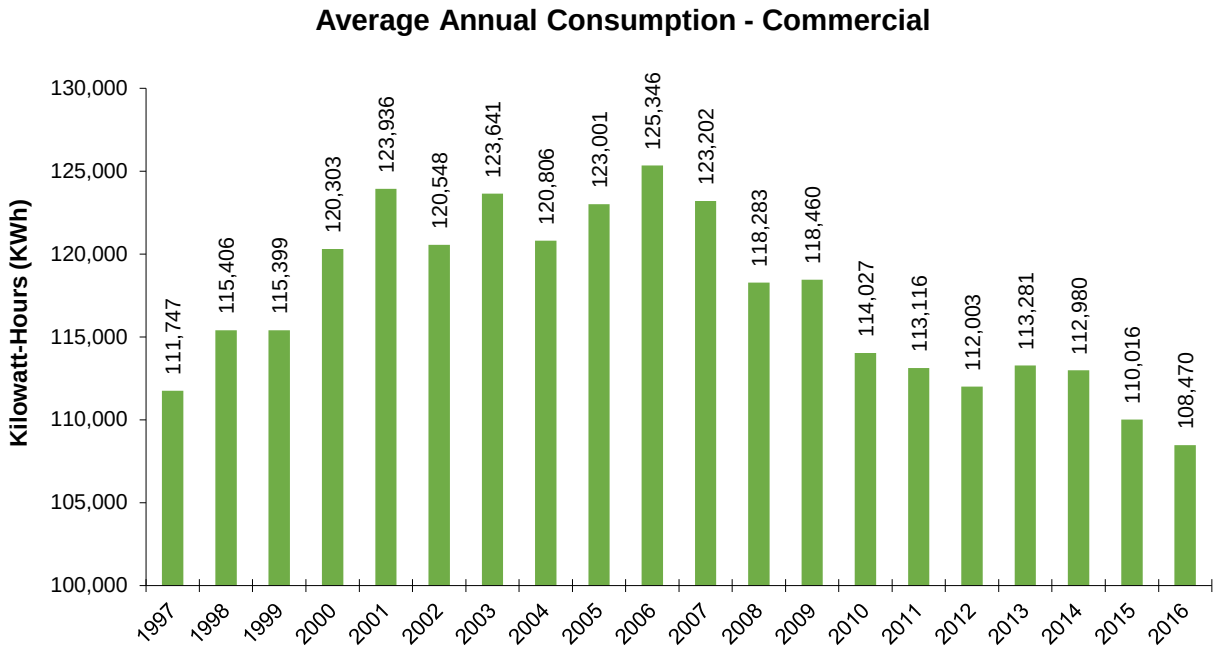
3.3 Energy Consumption and Demand

The following chart shows the 20 year history for total energy sales to all types of customers. Energy consumption has not increased over the past decade even though the number of customers have increased. Conservation may account for this slight decrease. Annual fluctuations can also be created by seasonal weather patterns.



The next two charts show the amount of energy consumed by the average residential and commercial customer. Over the past 20 years, the average residential customer has used approximately the same amount of energy each year, while there has been a noticeable decrease (13%) in usage by commercial customers over the past 10 years.

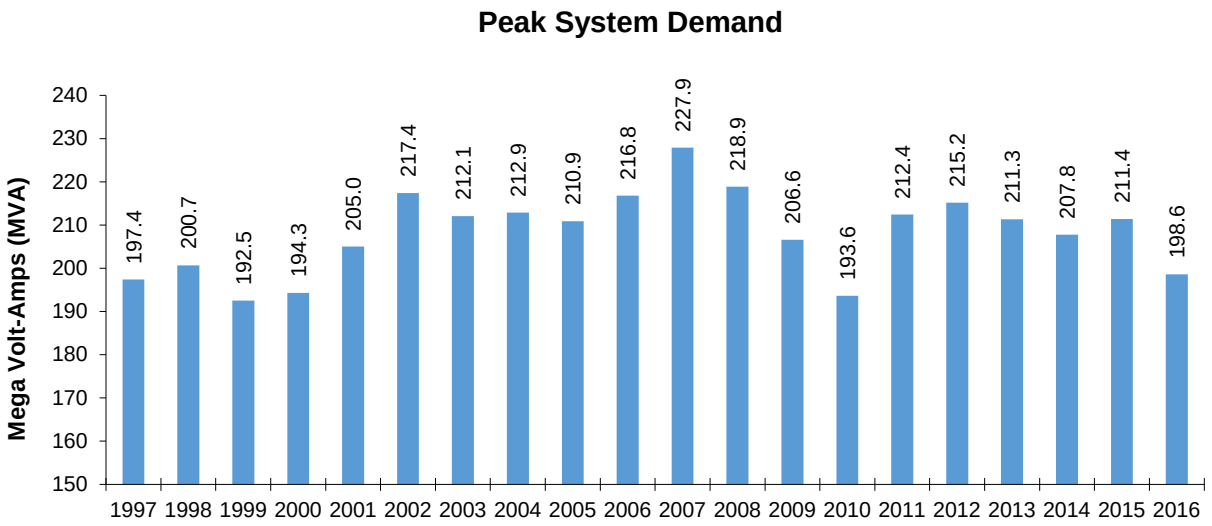




The next chart shows the peak system demand for the past 20 years. SaskPower charges Saskatoon Light & Power for bulk power based on three criteria:

- Electrical Energy (GWh)
- Demand Charge (MVA)
- Monthly Service Charge

The demand charge is intended to relate to costs associated with transmitting the electricity from the generating stations to the service area. If Saskatoon Light & Power's customers use power at the same point in time, the transmission system needs to be sized accordingly to handle that quantity of electricity and SaskPower, therefore, charges more. The peak system demand indicates the highest level observed during the year. This typically occurs on one of the hottest days in the summer.



This chart shows that there has been a 17.7% fluctuation in peak system demand between the high experienced in 2007 and one of the recent lows experienced three years later in 2010. This fluctuation can lead to annual bulk power cost variances from budget.

3.4 System Reliability

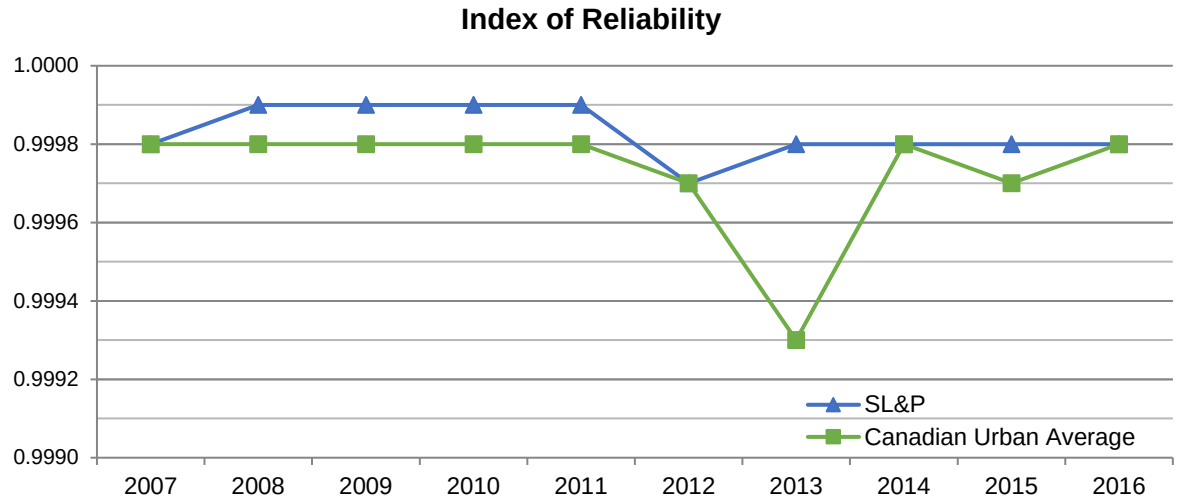
Saskatoon Light & Power is a member of the Canadian Electricity Association (CEA). The CEA collects reliability statistics on behalf of its member companies and reports the averages for comparative purposes.

The CEA reports on urban utility statistics separate from rural utilities in order to provide a better basis for comparison. Urban utilities generally have better reliability.

Saskatoon Light & Power has set a goal of meeting or exceeding the system reliability performance based on the Canadian Urban Average.

Index of Reliability

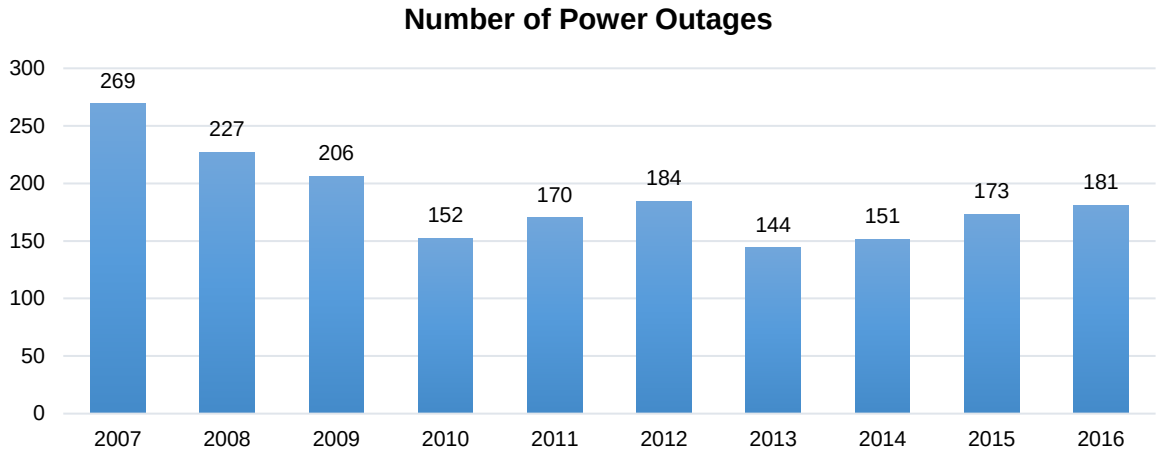
The following chart shows the Index of Reliability (IOR) for Saskatoon Light & Power in comparison to the Canadian Urban Average. This index measures the availability of service to customers on an annual basis. For example, an IOR of 0.9998 would mean that electrical service is provided 99.98% of the time over a one year period.



This chart shows that Saskatoon Light & Power has been consistently meeting its goals and performing as well as, or better than, the Canadian Urban Average. This is a key metric for utilities since both the number of outages as well as the duration have an effect on the IOR.

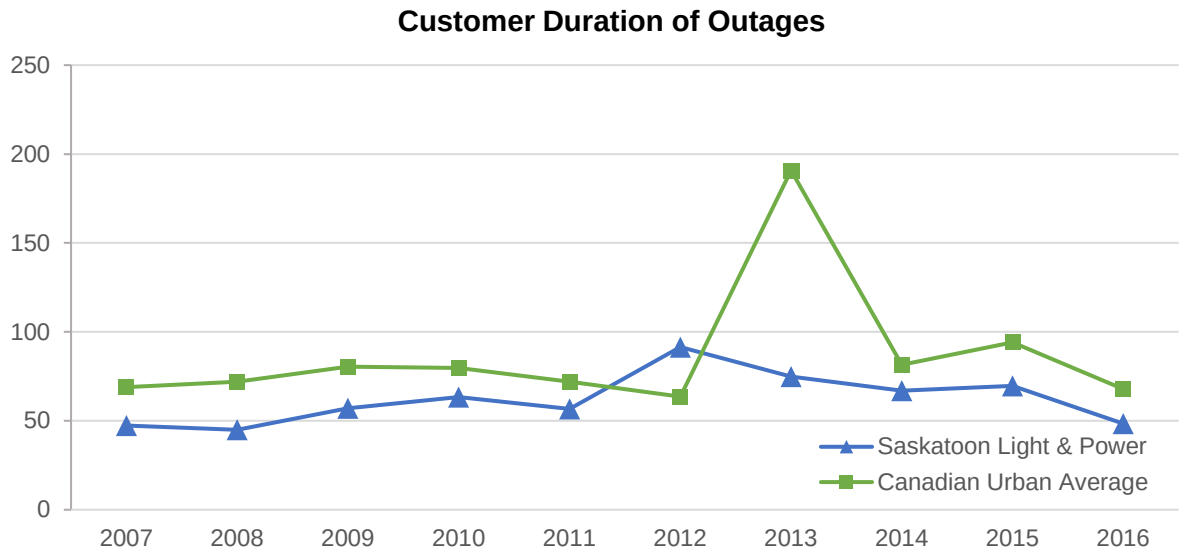
Number of Power Outages

Saskatoon Light & Power also tracks the number of outages that are experienced annually and compares against its own performance from previous years. The following chart shows that the number of outages has remained relatively consistent over the past seven years (2010 to 2016) and was slightly higher in the previous three years (2007 to 2009).



Duration of Power Outages

The following chart shows the average time for restoring power to customers who experienced an outage during the year. The 10-year average for Saskatoon Light & Power was 62 minutes. The Canadian Urban Average was 87 minutes. Saskatoon Light & Power performed better than the Canadian Urban Average in every year except 2012.



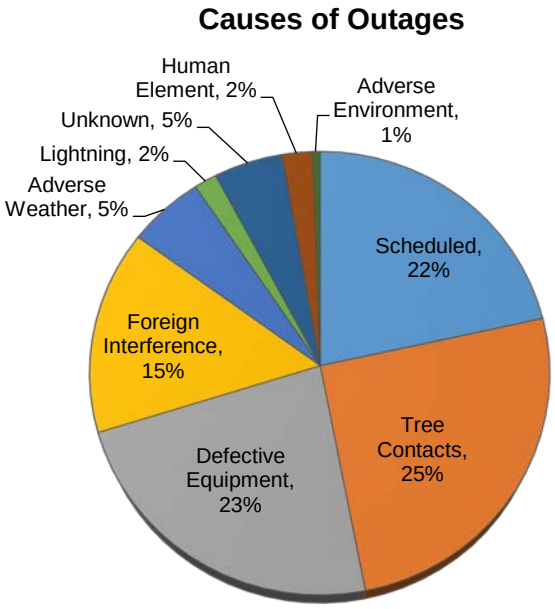
Cause of Outages in 2016
The four primary causes of power outages in 2016 were:

1) Tree contacting overhead power lines (25%);

2) Defective equipment (23%);

3) Scheduled outages for maintenance work (22%);

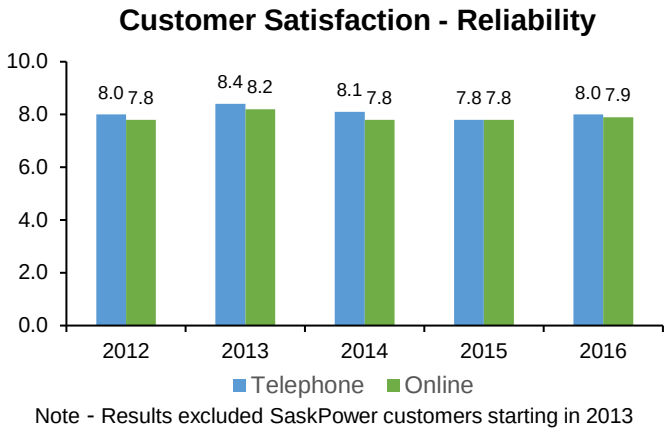
4) Interference by a third party (such as damage from a vehicle collision, bird contacts with overhead power lines, contractor dig-ins with underground cables, etc.) (15%).



3.5 Customer Satisfaction

"Saskatoon Light & Power is committed to timely, friendly and professional service. Our customers are treated in a fair and equitable manner."

The City conducts an annual Civic Services Survey. One of the questions asks customers to rate the reliability of their electricity provider. Satisfaction levels have remained high over the past five years and was the second highest among all civic services surveyed.

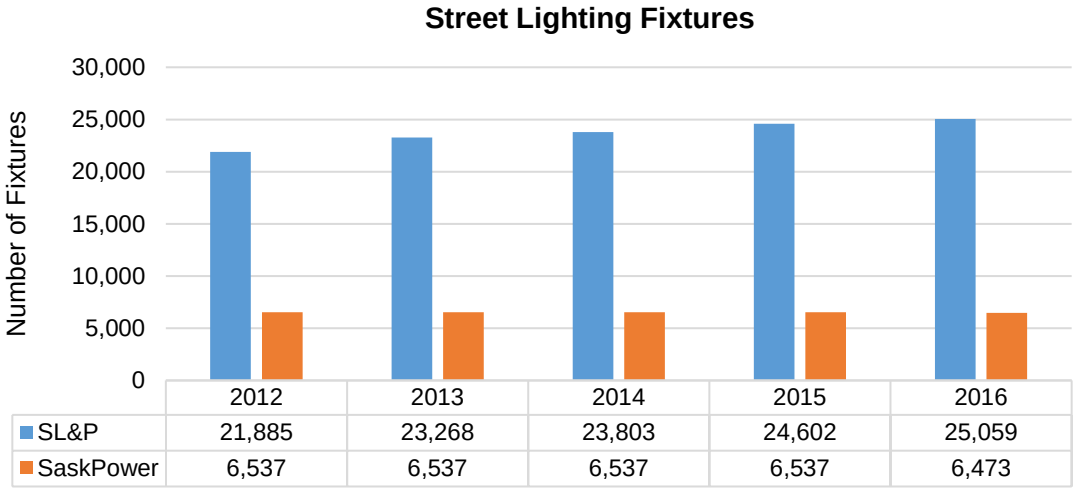


Note - Results excluded SaskPower customers starting in 2013

Based on the importance of the service (taken from the 2014 survey) and satisfaction (from 2016), electrical service reliability provided by Saskatoon Light & Power ranks as the third highest key strength among civic services (high importance and high satisfaction).

3.6 Street Lighting

Saskatoon Light & Power maintains 79% of the 31,532 lighting fixtures in Saskatoon and SaskPower maintains the remaining 21%.

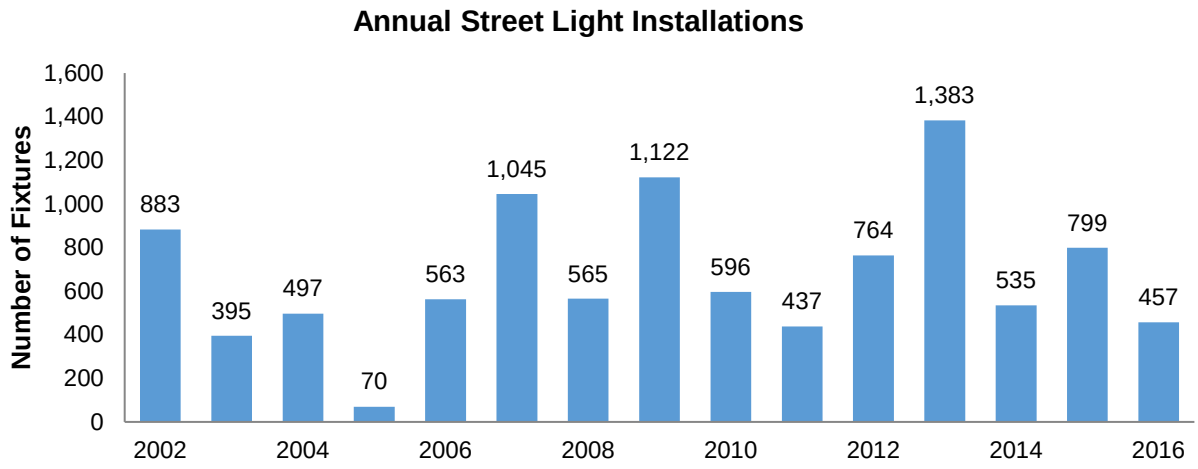


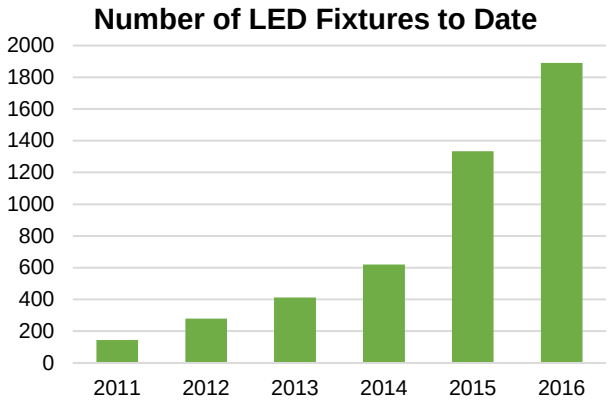
	2012	2013	2014	2015	2016
SL&P	21,885	23,268	23,803	24,602	25,059
SaskPower	6,537	6,537	6,537	6,537	6,473

Responsibility for street lighting does not follow electrical franchise boundaries. In 2004, City Council directed Saskatoon Light & Power to take responsibility for all new street lighting projects in the city. Prior to 2004, SaskPower had been installing the street lights in new growth areas outside of our franchise area.

The increase in land development activity over the past decade has been significant and has increased the number of lights installed annually. Typically, 500 to 600 lights are installed each year in residential and industrial areas and additional lights are installed when major roadway projects are undertaken.

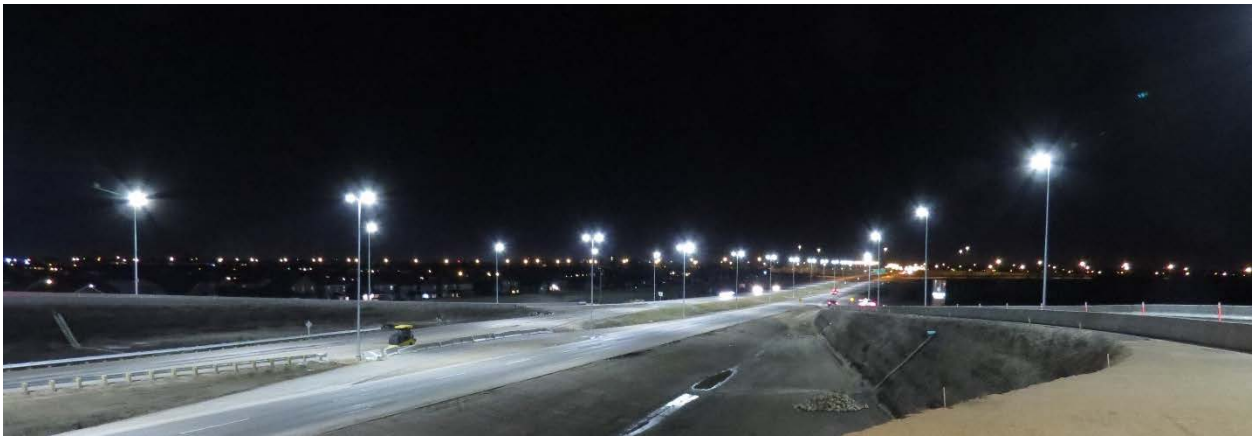
The ten-year average for installations is 770 lights per year.





Saskatoon Light & Power has also been leading the way with the implementation of Light Emitting Diode (LED) lighting. LED lights use significantly less energy to produce the same amount of light. City Council approved a recommendation in 2014 to make LED lights the standard for all new installations.

By the end of 2016, a total of 1,890 LED lights had been installed comprising 7.5% of all lights owned by Saskatoon Light & Power.



3.7 Seasonal Decorations and Banners

Saskatoon Light & Power provides 487 seasonal decorations including both illuminated and non-illuminated displays as well as seasonal banners. These decorations are installed in the downtown core as well as along Central Avenue, 33rd Street West, 8th Street East, and on 22nd Street West.

A total of 379 banners were also installed in various business districts throughout the year as part of the City's Banner Program. Installing banners helps to promote local events and provide a sense of arrival into the area.

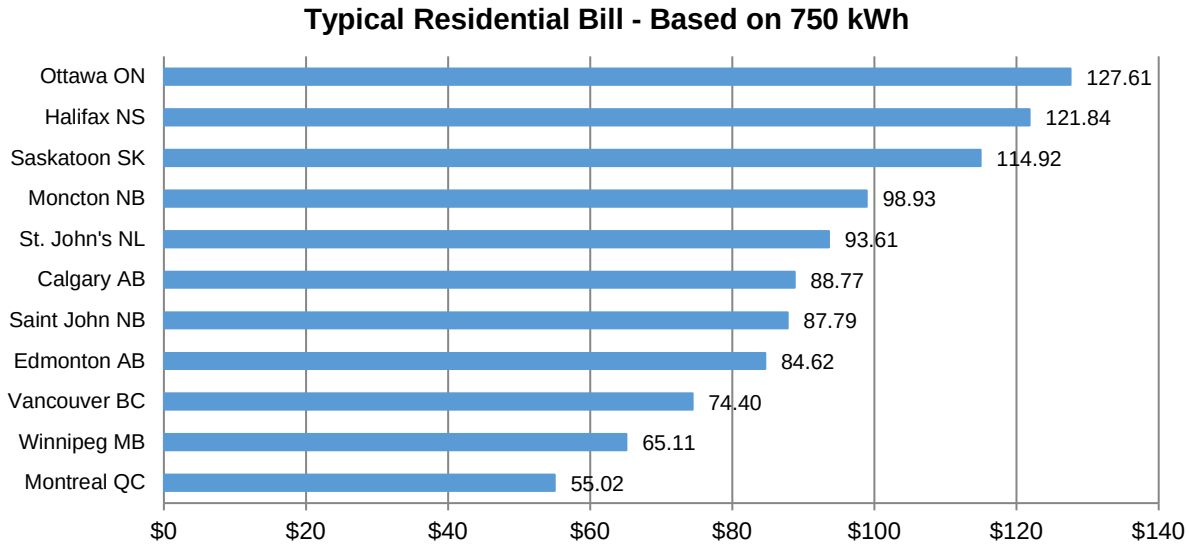
4.0 OUR FINANCES

4.1 Competitive Rates

Saskatoon Light & Power rates for electricity are regulated by City Council through bylaw and have generally been set the same as SaskPower rates for similar customer classes.

The province has established the Saskatchewan Rate Review Panel which reviews applications made by the crown utilities and receives feedback from customers prior to making their recommendation to the province.

The following chart provides a comparison of electricity rates in provinces across the country. Rates in Saskatchewan are relatively high, due in large part to a lack of hydropower resources in the province. Provinces with an abundance of hydropower (including British Columbia, Manitoba and Quebec) tend to have lower energy costs.



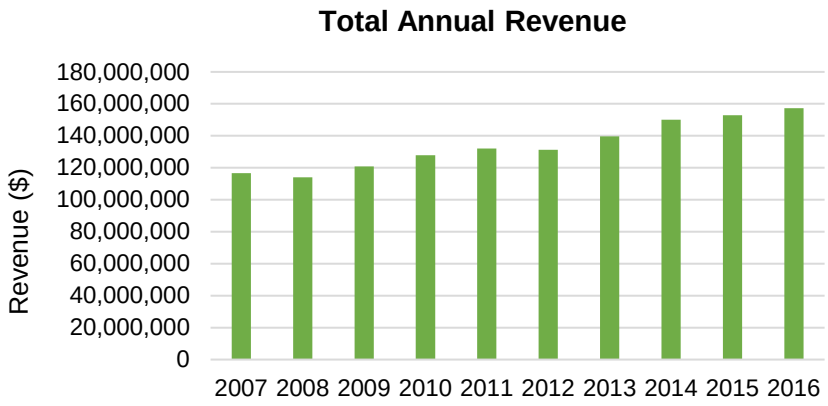
Source - Manitoba Hydro May 2016 Electricity Bill Survey. Rates do not include municipal surcharges.

4.2 Summary of Revenues

Over the past 10 years, total annual revenues have increased from $116.7 million in 2007 to $157.2 million in 2016. The average annual increase in revenue has been 3.37%, which accounts for both rate increases over time as well as any increases or decreases in sales quantities. The total overall increase over the past 10 years was 34.7%.

During the same time period, overall consumption by Saskatoon Light & Power's customers decreased by 7.5%.

Therefore, the increase in total annual revenues can be primarily attributed to rate increases to customers.

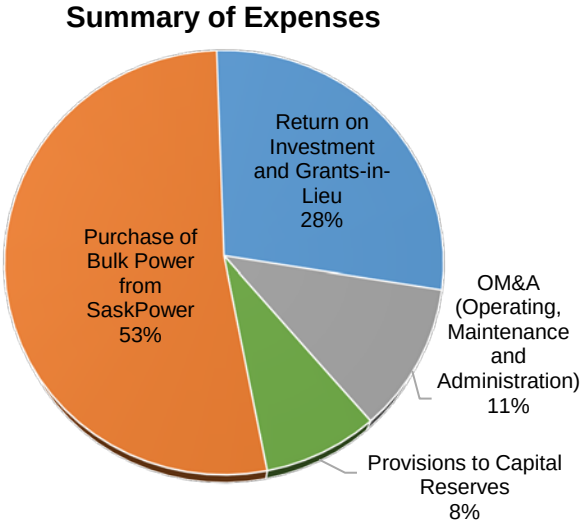


4.3 Summary of Expenses

Saskatoon Light & Power's expenses can be summarized into four main categories.

The largest cost to the utility was the cost of purchasing bulk power from SaskPower. In 2016, bulk power totalled $82.55 million, which represented 53% of total expenses.

The second largest category was the combination of the Return on Investment (ROI) ($23.06 million) and Grants-in-Lieu (GIL) of taxes ($21.1 million) provided to the City. Together, these two items provided a net benefit of $44.16 million and represented 28% of the utility's expenses.



The third largest cost was the Operating, Maintenance and Administration expenses (OM&A). These items totalled $17.57 million and represented 11% of the utility's total expenses. Included in this category was a cross-charge to Corporate Revenue to provide meter reading and billing services.

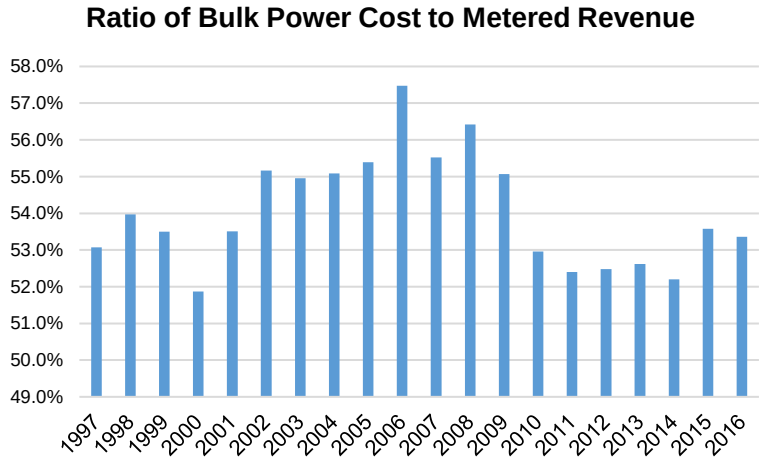
The final category was the provision to capital reserves. In 2016, $13.1 million was allocated to the utility's reserves to pay for both renewal and expansion of the distribution system (8% of expenses).

4.4 Ratio of Bulk Power Cost to Metered Revenue

Saskatoon Light & Power monitors the ratio of bulk power costs as compared against total metered revenue. Both of these rates are effectively set by SaskPower since City Council in the past has given direction to Saskatoon Light & Power to match SaskPower's retail rates.

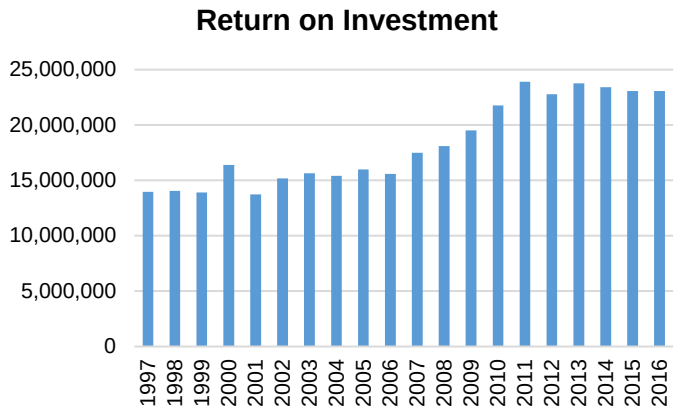
When the increase to the bulk power cost exceeds the increase in retail rates, it is difficult for the utility to deal with inflationary cost increases for both operating and capital expenses.

An increase in this ratio of 1% would have a $1.5 million negative impact on Saskatoon Light & Power's finances.



4.5 Financial Return to the City of Saskatoon

Saskatoon Light & Power provides a significant financial benefit to the City by providing both an ROI as well as a GIL of taxes. These funds are made available from the utility for the City to use for general operations. This is an important source of revenue for the City, which reduces the pressure on property taxes.

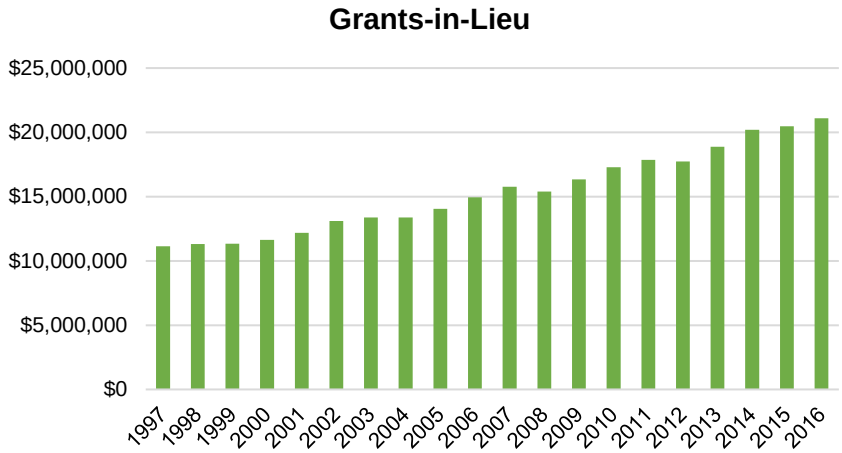


Significant increases were made to the ROI between 2006 and 2011. The ROI increased from $15,581,531 to $23,907,400 during that time (an increase of 53%).

The utility has been able to sustain the ROI between 2011 and 2016 with minor annual fluctuations. In 2016, the ROI was $23,059,700. ROI now represents 14.7% of the utility's total gross revenue, which is very high within the industry.

Saskatoon Light & Power also provides GIL. This amount is formula driven each year based on total revenues. As electricity rates increase, or sales volumes increase or decrease, GIL is adjusted accordingly.

Over the past 10 years, GIL increased from $15,769,175 in 2007 to $21,101,449 in 2016 (an increase of 34%).



Combining ROI and GIL, the total net financial benefit from Saskatoon Light & Power to the City in 2016 was $44,161,149.

Without these stable sources of income, the City would need to find revenue from other sources to meet its requirements. If property taxes were increased to cover these amounts, taxes would need to increase by 23.4%.

4.6 Year-End Operating Budget Variance

Saskatoon Light & Power had a positive variance at the end of 2016 of $1,293,500 (0.82% of total revenue).

Sales volumes were below budget as a result of milder than average weather, both in the summer and winter, resulting in fewer cooling and heating days. A 5% rate increase announced by SaskPower mid-year increased revenue and helped to offset the lower sales volumes. The result was slightly higher than budgeted revenue ($347,000).

Bulk power costs were below budget ($762,300) as a result of the decreased sales volumes and administration and general expenses were below budget by $328,500.

2016 Operating Budget Variance ($000)

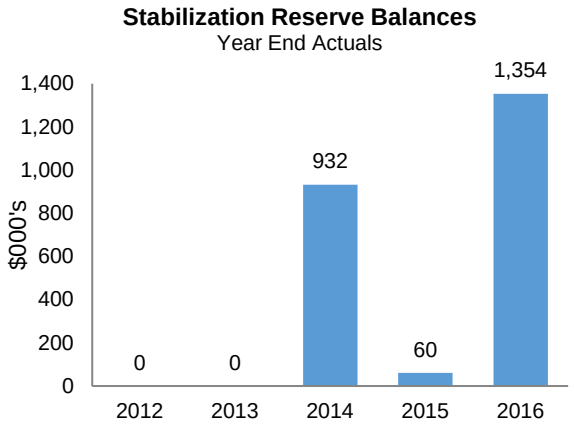
	Budget	Actual	Variance	%
Revenue				
Metered revenue	$141,533.5	$139,468.4	($2,065.1)	-1.46%
Municipal surcharge	14,020.2	14,063.9	43.7	0.31%
Unbilled revenue	0.0	2,445.4	2,445.4	
Other revenue	1,311.5	1,234.5	(77.0)	-5.87%
Total revenue	$156,865.2	$157,212.2	$347.0	0.22%

Expenses				
Bulk power	$83,307.7	$82,545.5	($762.3)	-0.91%
Grants-in-lieu of taxes	21,035.8	21,101.4	65.6	0.31%
Distribution	7,627.2	7,687.8	60.6	0.79%
Street lighting maintenance	1,323.6	1,341.6	18.0	1.36%
Admin & general	7,571.1	7,242.6	(328.5)	-4.34%
Provision to EDRR	7,005.0	7,005.0	0.0	0.00%
Provision to EDER	5,935.1	5,935.1	0.0	0.00%
Total expense	$133,805.5	$132,859.0	($946.5)	-0.71%
Revenue less expense	$23,059.7	$24,353.2	$1,293.5	5.61%
(To)/From Stabilization reserve	$0.0	($1,293.5)		
Return on Investment	$23,059.7	$23,059.7	$0.0	0.00%

Saskatoon Light & Power was able to balance the final year-end variance by transferring $1,293,500 to its operating stabilization reserve.

4.7 Operating Stabilization Reserve

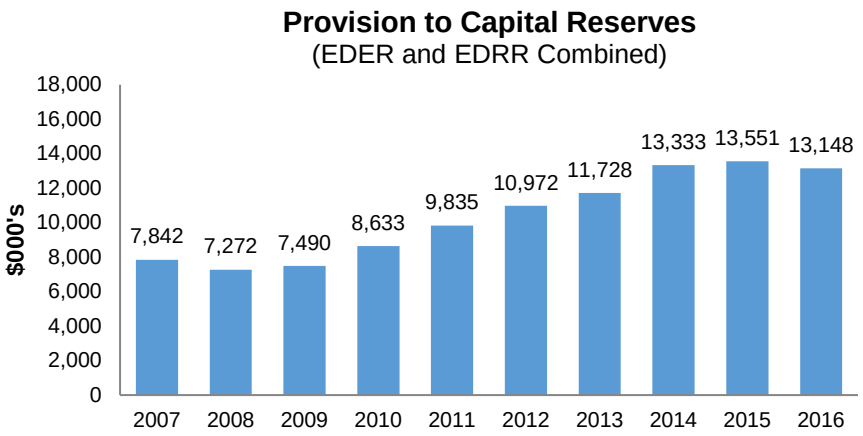
A stabilization reserve has been created by Saskatoon Light & Power to address any positive or negative variances that may occur each year within the operating budget. The source of funds for this reserve comes from previous year surpluses. In years when a negative variance occurs, funds are withdrawn from this reserve. Use of this reserve allows the utility to meet its ROI levels without the variances having an impact on the City's general accounts.



At the end of 2016, there was $1,354,000 remaining in the reserve, which is equivalent to 0.86% of total revenue.

4.8 Capital Spending and Capital Reserves

Saskatoon Light & Power funds the extension and replacement of its infrastructure through the use of capital reserves: the Electrical Distribution Extension Reserve (EDER); and the Electrical Distribution Replacement Reserve (EDRR). These reserves receive annual provisions from the utility's operating budget. A review of the sufficiency of these reserves is completed annually to ensure that they will meet the capital expenditures planned in the next five years.

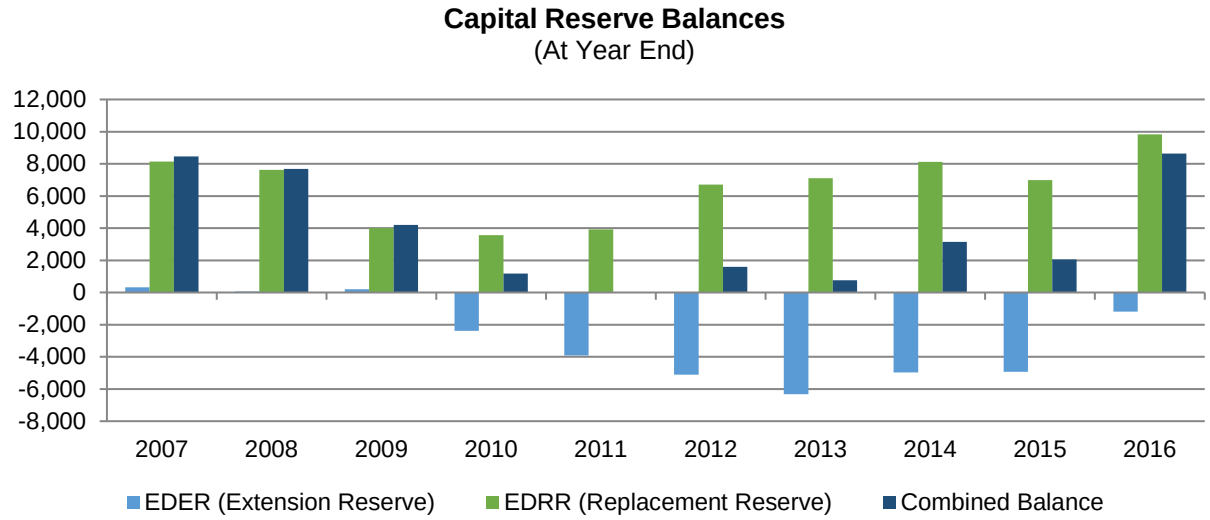


The adjacent chart shows the amount of funds provided to EDER and EDRR over the past 10 years.

Beginning in 2011, there was a concerted effort to increase the provisions to these reserves. Redevelopment within the downtown core and in suburban centres necessitated the upgrading of electrical infrastructure to handle the increased capacity. At the same time, it was recognized that renewal of the existing infrastructure was an increasing priority.

The provision to capital reserves leveled off over the past three years, largely due to unfavourable rates established by SaskPower that caused the cost of bulk power to increase faster than increases in revenue. In order to maintain the ROI and address inflationary pressures, it was necessary to postpone further increases to the capital provisions.

An asset management report will be presented to City Council in 2017 providing a target for future provisions to capital reserves.



Also shown are the capital reserve balances for EDER and EDRR as well as the combined value of the two reserves. By policy, the utility may run a deficit in one reserve as long as the combined value of the two reserves remains positive.

In 2007, the combined value of the reserves was $8,460,000. Between 2010 and 2015, the balance varied between $0 and $3,151,000. At the end of 2016, the balance was

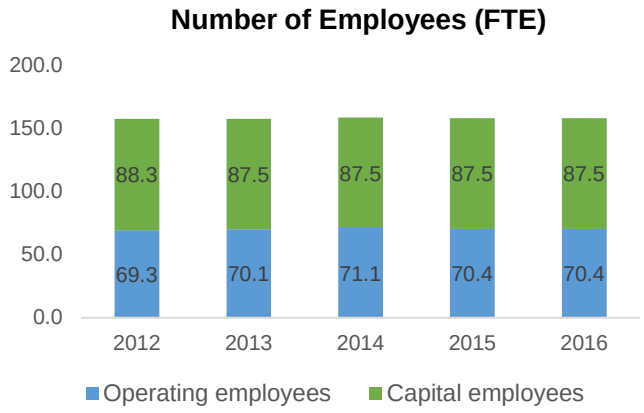
$8,637,000. Saskatoon Light & Power has intentionally left a positive balance to ensure there is sufficient funding if a failure occurs on the system that requires immediate attention. There are also some large capital projects that the utility is preparing to undertake in the future.

5.0 OUR PEOPLE

5.1 Number of Employees

Saskatoon Light & Power had 157.9 Full-Time Equivalent (FTE) employees as of December 31, 2016.

These employees were engaged in administration, system planning, engineering design, construction, maintenance, and system operations.



Saskatoon Light & Power has an extensive operating budget to maintain and operate the existing distribution system as well as a significant capital budget to complete major upgrades and installations. The utility's staff, therefore, work on both operating and capital projects throughout the year. Staffing levels have remained relatively constant over the past five years despite increasing workload.

5.2 Representative Workforce

Saskatoon Light & Power believes that its workforce should be representative of the public it serves.

The following chart shows that while the utility has a higher percentage of staff with aboriginal ancestry than employed by the City as a whole, it is still significantly below the Saskatchewan Human Rights Commission's (SHRC) goals set in 2014.

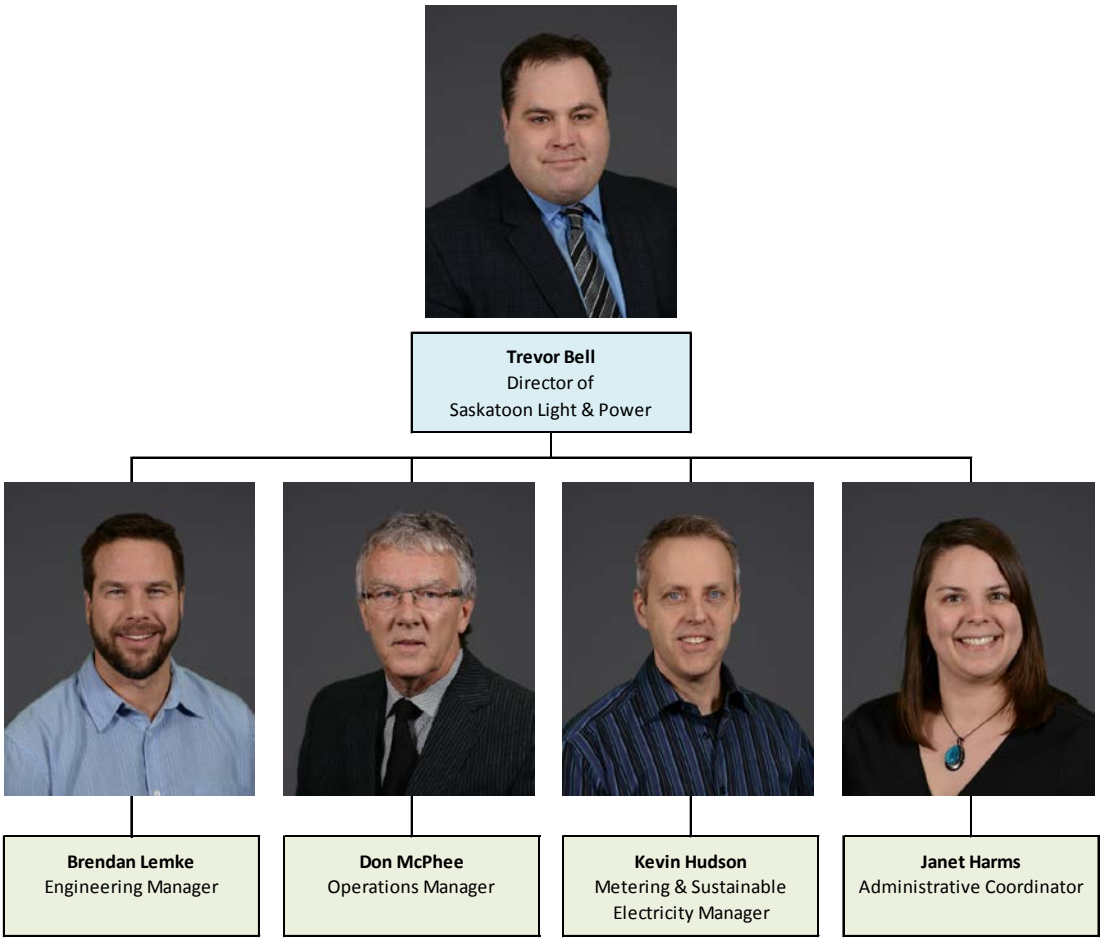
The other equity groups (visible minorities, people with disabilities, and females) are also underrepresented within the utility. This varies significantly within the different sections of the utility though, with some sections exceeding the SHRC's goals for visible minorities and females.

Percentage of Employees Self-Declared as an Equity Group Member
December, 2016

Equity Group	Saskatoon Light & Power	City of Saskatoon	SHRC Goals
Self-Declared as Aboriginal Ancestry	9.7%	7.2%	14.0%
Self-Declared as Visible Minority	9.7%	10.6%	11.0%
Self-Declared as Person with Disability	3.7%	3.8%	12.4%
Self-Declared as Female	8.2%	38.0%	46.0%

5.3 Organizational Structure

The organizational chart provides a high level overview of how Saskatoon Light & Power is organized and key positions in 2016.



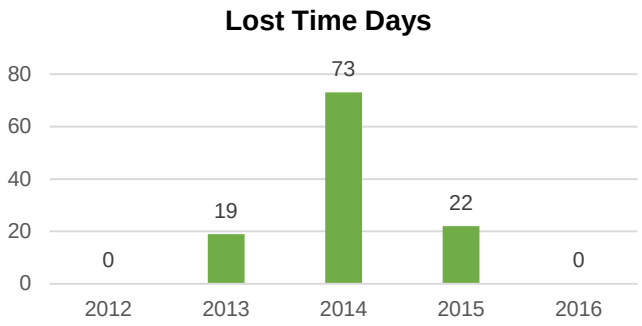
Accounting services for the utility are provided by the Business Administration division. The Corporate Revenue division of the Asset & Financial Management Department provides utility meter reading, billing and collection services common to the electrical, water and sewer utilities.

5.4 Employee Safety

Employee safety is paramount at Saskatoon Light & Power.

The utility has a mature Safety Performance Management System and participates in benchmarking studies with the Canadian Electrical Association (CEA) in a group of similar sized utilities (Group 3: under 300 employees).

The following two graphs show the number of lost time injuries that occurred at Saskatoon Light & Power over the past five years and the resulting number of days away from work.

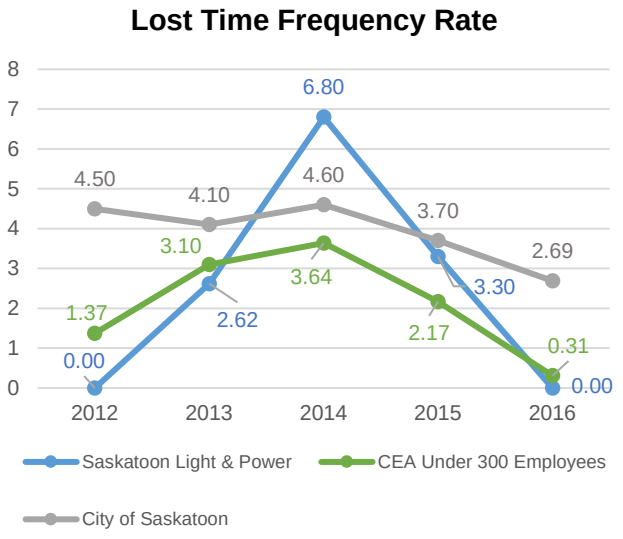


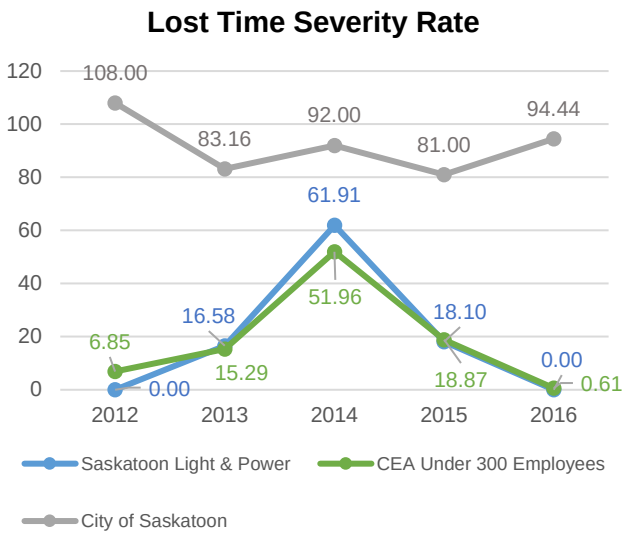
In 2016, Saskatoon Light & Power is very proud to report that there were no lost time incidents. This is a significant achievement given that staff worked in excess of 229,000 hours. Their dedication to working safely and making continuous improvements to our safety program is recognized.

When the same result was achieved in 2012, the CEA presented Saskatoon Light & Power with the Vice President's Award for Safety Excellence.

In order to compare results against the CEA member companies and against the City's overall average, the number of lost time incidents is expressed as the Lost Time Frequency Rate. Over the past five years, the resulting average rate for Saskatoon Light & Power was 2.54. This is close to the CEA member companies' rate of 2.12, but is significantly lower than the City average of 3.92.

Severity is a measure of the number of days missed from work as a result of an injury. For comparative purposes, the number of days missed from work is expressed as the Lost Time Severity Rate. Over the past five years, the resulting average rate for Saskatoon Light & Power was 19.32. This is very close to the CEA member companies' rate of 18.72, but is significantly lower than the City average of 91.72.



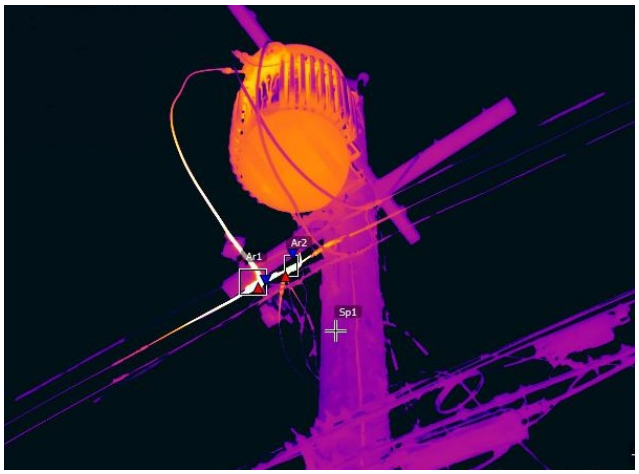


6.0 OUR WORK

6.1 Operating Highlights

Comprehensive Testing

Work continued in 2016 to conduct comprehensive tests on key infrastructure equipment.



Annual thermographic inspections are completed each winter to look for "hot spots" within the distribution system. As electrical components begin to fail, they often generate an increased amount of heat. An infrared camera is used to detect the heat and determine where preventative maintenance is required. For example, in the adjacent image the power lines appear white near the pole. This is not normal and indicates an area of concern. In 2016, 32 critical locations were found using this technique and an additional 158 locations of significant, but not critical, concern were found.

Comprehensive testing was also conducted on all high voltage substation transformers. These tests were conducted in 2015 and will be repeated again in 2017 as part of a

three year testing program. This diagnostic test determined which transformers were starting to show signs of aging and may need additional maintenance. Saskatoon Light & Power has 20 of these transformers and each is worth approximately $1 million; therefore, regular monitoring of this equipment is critical.

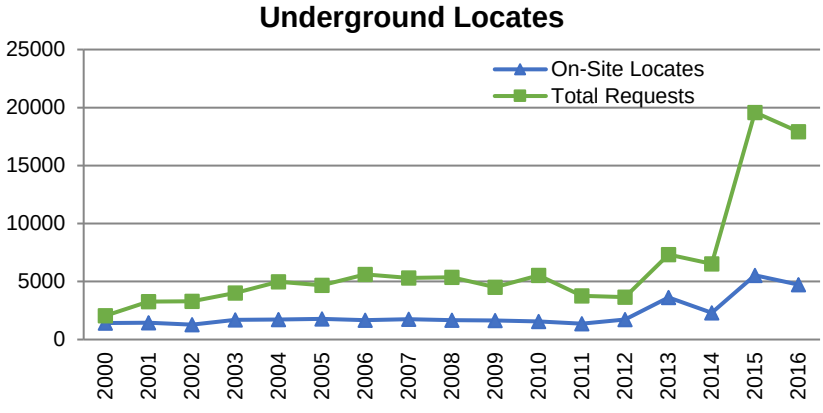
Tree Trimming

Each year, overgrown trees come in contact with power lines causing service interruptions. Saskatoon Light & Power, therefore, has a tree trimming program aimed at cutting back tree branches to remove this hazard.

Underground Locates

It was once again a very busy year for underground locates in 2016. In 2015, the utility made the decision to join the Sask 1st Call system. The main benefit of the system was to eliminate the need for contractors and residents to contact Saskatoon Light & Power separately from all other utilities. Being part of a province-wide one-call system was aimed at reducing the number of underground lines hit by contractors, improve worker safety, and protect the integrity of the electrical system's assets.

In 2016, Saskatoon Light & Power received 17,916 underground locate requests through the Sask 1st Call dispatch service. This was down slightly from the 19,587 locate requests in 2015, but was still significantly above the average from 2000 to 2014 of 4,660 requests.



Many of these requests could be cleared over the phone with the customer, but 4,731 on-site field locates were necessary in 2016. This was down from a high of 5,540 in 2015 and significantly above the previous average from 2000 to 2014 of 1,778.

Street Light Pole Inspection
A street light pole inspection program was launched in 2015 to prioritize the replacement of poles. A total of 1,429 poles were inspected in high priority locations including the downtown and along major roadways.

Work on this initiative continued in 2016 with 1,386 poles being inspected. A total of 142 poles were replaced based on these inspections.

6.2 Capital Projects

Saskatoon Light & Power provided funding to 30 capital projects in 2016.

The adjacent chart provides a summary of the spending by infrastructure category. This information does not include any carry-over funding from previous years, but does include customer contributions.

Total funding provided to capital projects in 2016 was $17,008,000.

2016 Capital Budget	
Category	**2016 New Funding**
Substations	$960,000
Communication & Control	$710,000
Transmission	$100,000
Distribution	$6,275,000
Network	$1,610,000
Alternative Energy	$200,000
Metering	$2,050,000
Lighting	$4,118,000
General	$985,000
Total	**$17,008,000**

6.2.1 Smart Meters & Automated Metering Infrastructure

Saskatoon Light & Power hit an important milestone in 2016 with its smart meter and Automated Metering Infrastructure (AMI) project.

Beginning in 2008, a change was made to begin implementing electronic smart meters instead of the electro-mechanical meters that had previously been used. Switching to the new meters was the first step toward implementing an AMI system. By the end of 2016, smart meters had been provided to 73% of the utility's customers (44,500 meters). The target is to complete this deployment by the end of 2017.

By July 2016, the communication and computer infrastructure was in place for those meters to be read remotely and the system was activated. Customers with smart meters began receiving bills based on actual monthly reads, eliminating the need for estimates.

Funding in 2016 totalled $2.05 million.

This project was a collaborative effort between Saskatoon Light & Power, Saskatoon Water, and Corporate Revenue to implement a single system for both electricity and water meters.

6.2.2 Customer Connections (New and Upgrades)

One of the largest regularly occurring capital projects is for upgrades and extensions of the electrical distribution system due to customer demand for new electrical service or electrical load growth.

There were 133 residential service work orders completed in 2016. Residential projects included line relocations, electrical services to new builds and infill developments, and burying overhead services underground. In addition, there were 45 commercial upgrades completed in 2016.

A total of $2.24 million was spent in 2016, including $1.2 million that was collected from customers for their portion of the work.

6.2.3 Street Lighting

Saskatoon Light & Power currently provides street lighting for 79% of the city and provides lighting in all new development areas.

In 2016, $4.118 million was budgeted for the installation of new street lights. The vast majority of this funding comes from land developers, with a smaller portion coming from other civic transportation projects. Saskatoon Light & Power invests $300 per light, matching the long-standing program offered by SaskPower.

The budget included $60,000 to respond to isolated areas that needed street lighting improvements. An additional $900,000 was budgeted to repair street lights that have either been damaged in car accidents or to replace those that were at the end of their lifespan. Saskatoon Light & Power recovers costs from insurance companies whenever possible.

6.2.4 Feeder Upgrades & Replacement

Each year, Saskatoon Light & Power targets key distribution feeders for upgrades or replacement. In some cases, these upgrades are the result of increased demand on the system in that local area, and the lines need to be upgraded to provide more capacity. In other locations, the condition of the distribution system may have led to problems and the infrastructure needs to be replaced.

In 2016, $2.125 million was budgeted to undertake this type of renewal.

6.2.5 New North Supply Point

Saskatoon Light & Power receives all of its bulk power from SaskPower at the Queen Elizabeth Switching Station near the Saskatoon Landfill.

In 2015, a new capital project was created to begin making plans for a new supply point coming from the north. SaskPower had recently installed a new transmission system which ties to different generating stations and provides an independent source of power from the Queen Elizabeth station.

Saskatoon Light & Power provided $800,000 to undertake the first stages of functional design. Work on this project progressed in 2016 and several alignments were considered to bring this power into the city limits and connect to Saskatoon Light & Power's substation near Warman Road south of Circle Drive.

Construction of this new line will be subject to City Council approval in the future.

6.3 Continuous Improvement Initiatives

Upgraded Phone System

Saskatoon Light & Power implemented an upgraded telephone system in 2016. The primary purpose of the new system was to improve communication with citizens during service disruptions but other benefits were also realized.

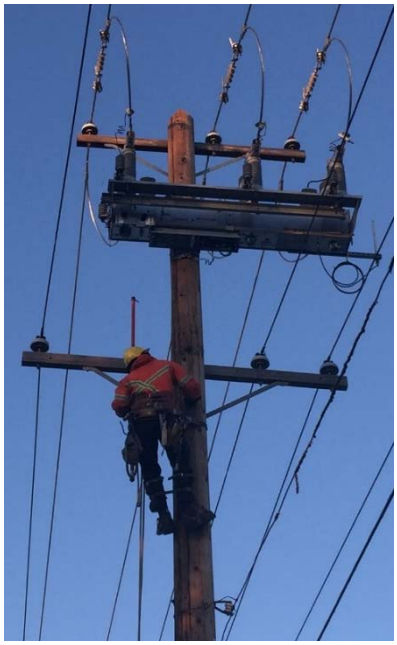
The selected system built on the hosted contact centre previously implemented in 2014 by the Customer Service Centre, Roadways & Operations division.

With the new system in place, Saskatoon Light & Power improved daytime service levels by increasing the number of customers that can be served concurrently. Customers are now efficiently directed to appropriate queues for prompt responses. A change was also made to increase the number of staff answering phones from four to six without increasing existing staffing levels.

An increase to after-hour service levels was also made. Customers now hear a recorded message providing regularly updated information on any service disruptions and then are able to connect with the Customer Service Centre for live responses.

By working together, Saskatoon Light & Power has improved its level of customer service by increasing capacity and efficiency.

Intellirupter
New technology was implemented for the first time by Saskatoon Light & Power on the service provided for the city's Water Treatment Plant. Restoring service to this customer is a high priority following a power outage.



By installing the Intellirupters, it is now possible to automatically redirect which electrical substation provides service to the plant. If a power outage is affecting one substation, the Intellirupters switch the service to another substation within seconds. These devices provide superior electrical service reliability to the Water Treatment Plant.

The Intelliruptors contain modern protection devices similar to those found in substations that detect a fault quickly to reduce the damage that can occur to the electrical distribution system by the mechanical forces caused by the fault. Additionally, because the devices automatically switch between sources, restoration efforts can be focused on other areas that may be affected during a storm or other event, thereby restoring power to other customers more quickly.

This pilot project is currently being evaluated, but early performance has met expectations. Additional units may be installed in other key locations in the future.

Composite Cross Arms
Electrical utilities have used wooden cross arms at the top of power poles for over a century. These cross arms are in close proximity to very high voltage electricity and can sometimes catch on fire if hit by lightning or come in contact with the energized lines. When this happens, a power outage occurs. Replacing the damaged arm takes time, which can extend the amount of time required to restore service.

To improve its reliability and responsiveness, Saskatoon Light & Power has begun using composite material for the cross arms. Benefits include: reduced maintenance costs; extended life spans; fire resistance; and improved electrical insulation. The cross arms are also half the weight of the wooden alternatives, which make them easier to install.

6.4 Community Awareness and Engagement

School Tour Program
Saskatoon Light & Power hosted 28 school tours in 2016 (850 students). The school tour program is designed to complement the grade 6 and grade 9 curriculums. Students learn what electricity is and how to be safe around it. They learn about the environment, social and economic impacts of electricity use in Saskatchewan, and ways to reduce those impacts. They also learn about career opportunities in the electricity industry.

Student Action for a Sustainable Future
Student Action for a Sustainable Future (SASF) is an action and inquiry project for grades 5 through 8 students in Saskatoon. Led by the City, partners include the Saskatchewan Environmental Society, Greater Saskatoon Catholic Schools, Saskatoon Public Schools, Saskatoon Light & Power, and the Sustainability Education Research Institute at the University of Saskatchewan. Supported by the partners, students from several schools develop, implement, and showcase inquiry and actions, which focus on six areas: waste, water, energy, food, transportation, and biodiversity that reduce greenhouse gas emissions in Saskatoon and around Saskatchewan.

The program has been internationally recognized by the Global Partnership for Environmental Education (GEEP) as a Case Study for best practices in environmental education.

7.0 OUR ENVIRONMENT

7.1 Stewardship

As a division of the City and a member of the CEA, Saskatoon Light & Power is committed to environmental stewardship. The following subsections provide information about specific actions the utility has taken in 2016.

Environmental Management System
Saskatoon Light & Power has implemented an Environmental Management System (EMS) across the division. The EMS is a structured framework to manage the utility's environmental performance and minimize its environmental impact.

The EMS was developed using the ISO 14001: International Standard for Environmental Management Systems. The ISO requires a continual cycle of planning,

implementing, reviewing, and improving the actions undertaken by the utility to meet its environmental obligations. The utility is the first division in the City to have an EMS consistent with ISO 14001.

Removal of Transformers Containing PCBs
Manufacturers no longer use polychlorinated biphenyl (PCB) in transformers, but when Saskatoon Light & Power's distribution system was developed in the 20th century, the use of PCB was common.

The utility, along with other utilities across the nation, has a program to remove and decommission all transformers containing PCB above the limit established by the federal government. Saskatoon Light & Power currently has 362 transformers containing more than 5 ppm of PCB out of a total of 4,544 transformers owned by the utility. This work is being scheduled to comply with the required deadline of 2024.

LED Street Lighting
Saskatoon Light & Power has been a leader in the implementation of LED lighting in Saskatchewan. After a successful pilot project in the Evergreen neighbourhood, City Council adopted a recommendation from the utility in January 2015 to implement energy efficient LED lighting for all new developments.

By the end of 2016, the utility had installed 1,890 LED lights (7.5% of the utility's total number of lights). These lights reduced total energy consumption by an estimated 728,747 kilowatt-hours annually. This decreased greenhouse gas emissions by 320 tonnes of carbon-dioxide equivalent (CO_2e), which is the equivalent of removing 64 cars from our roads annually. These benefits will continue to grow as more LED lights are installed in the future.

7.2 Clean Energy Projects

Saskatoon Light & Power has set a target to generate 10% of the utility's annual energy requirements from local, renewable resources. Achieving this ambitious target will take a number of years, but the utility has already constructed one generating station with others currently being planned.

Landfill Gas Power Generation Facility
The Landfill Gas Power Generation Facility has been generating electricity since 2014. In 2016, it generated 12,088 MWh of electricity and reduced emissions in Saskatoon by over 50,000 tonnes of carbon-dioxide equivalent (CO_2e) by combusting 6 million cubic metres of landfill gas. This is equivalent to removing over 10,000 cars from the road annually, while powering roughly 1,200 homes.

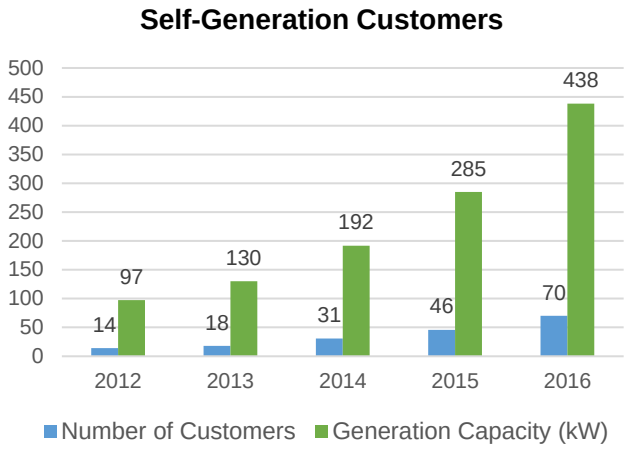
Customer Self-Generation Programs

The Customer Self-Generation Programs allow customers to generate a portion of their own electricity using solar panels, thereby offsetting their power costs. In 2016, Saskatoon Light & Power added a Net Metering Program to its customer self-generation options. Through the program, customers receive credits for generating more power than they need during the day, which they use at nighttime or when they are using more electricity than they can generate on their own.

In 2016, the number of customers taking advantage of these programs increased from 46 to 70, with an average system size of 5.0 kW for residential systems and 13.8 kW for commercial systems.

Combined, all of the solar panels interconnected with Saskatoon Light & Power's grid produce about 530 MWh each year (about 0.04% of the annual electricity sold to customers). This amount of electricity powers roughly 50 homes.

While this accounts for only a small fraction of the electricity used in Saskatoon, the number of connected customers is doubling in size every two years.



Solar Power Demonstration Site

Saskatoon Light & Power is operating the largest solar power plant in Saskatoon. The Solar Power Demonstration Site has 92 solar panels, for a total of 30.66 kW generation capacity, on four ground-mount arrays.

The site is located at the Landfill Gas Power Generation Facility, and electricity generated by the solar panels will provide 40% of the electricity needed to run the facility.

The Solar Power Demonstration Site is a partnership between Saskatoon Light & Power, Saskatchewan Polytechnic, the Saskatchewan Environmental Society (SES), and the SES Solar Co-operative. Saskatoon Light & Power and the SES Solar Co-operative co-own a fixed angle ground-mount array and a manually adjustable ground-mount array. Saskatchewan Polytechnic provided two sun-tracking arrays on a

long-term loan. The Saskatchewan Environmental Society provided seed funding to the SES Solar Co-operative.

The site compares different solar collection systems, in our local climate conditions, to analyze their cost and performance to inform future deployment. The site also, creates a source of solar power generation for the SES Solar Co-operative, and supports Saskatchewan Polytechnic's Green Energy Laboratory.

Combined Heat and Power Plant at St. Paul's Hospital
Saskatoon Light & Power and the Saskatoon Health Region are studying the feasibility of a Combined Heat and Power (CHP) Plant at St. Paul's Hospital. A CHP Plant produces both thermal and electrical energy at the same time, and does this more efficiently than producing each separately. The thermal energy would be used in the hospital for its heating requirements, and the electrical energy would go to the utility's electrical distribution system.

Hydropower Project at the Weir
Work has also progressed on the development of a hydropower project located at the Saskatoon Weir. Saskatoon Light & Power met with several groups interested in partnering on the project, and confirmed with City Council that it wishes the utility to explore this opportunity further.

If constructed, and depending on the various options being explored, this generating station could provide clean energy for up to 3,500 homes and reduce greenhouse gas emissions by 21,000 tonnes of CO_2e.

8.0 OUR CHALLENGES

While the overall performance of Saskatoon Light & Power has remained very strong, there are a number of challenges facing the utility.

Age and Condition of Existing Infrastructure
A significant portion of the utility's assets were installed during periods of significant land development and urban growth in the 1950's to 1980's. These assets are now 30 to 60 years old and are needing to be replaced.

Electrical utilities across Canada have identified that funding for renewal projects has not kept pace with the requirements to maintain the system. The result is that the average age of infrastructure is increasing. Asset sustainability and reliability will be at risk if not properly managed.

To address this concern, Saskatoon Light & Power has been working to implement asset management principles into its decision making processes. Work has also begun to establish service levels and key performance indicators.

Preparation of an asset management report began in 2016 and will be made available to City Council in mid-2017. The report will identify the overall condition of the utility's assets and will determine the level of capital spending required annually to address both renewal and growth issues.

Distributed Generation and Rates

Installation of distributed generation systems, such as solar panels on the roofs of homes and businesses, can provide customers with a clean source of energy. However, the existing utility rate structure does not take this growing trend into account, and does not adequately address the costs incurred by the utility to provide a backup power distribution system for these customers.

Distributed generation systems typically do not meet the full needs of the customer, so customers still rely on the utility for a portion of their power and for a backup supply when their system fails. The reduced amounts collected from these customers do not provide sufficient funding to maintain the extensive distribution system that is necessary to serve all customers.

Saskatoon Light & Power will continue to explore solutions to this issue in collaboration with SaskPower.

9.0 CONCLUSION

The overall performance of Saskatoon Light & Power remained strong in 2016. The utility is debt-free and provides a significant return on investment to the City. Reliability statistics show that the utility meets or exceeds the CEA Urban Average and is able to restore power faster than average when the power does go out.

Saskatoon Light & Power is fortunate to have a dedicated and skilled group of employees. The success of the utility is a direct result of their efforts over the past year. The guidance and support of the Transportation & Utilities Department General Manager, City Manager and City Council are also greatly appreciated.

10.0 APPENDIX

10.1 History of Saskatoon Light & Power

The municipal electric utility was started in 1906, with a small generating plant of 225 kilowatts located on the riverbank at Avenue H and 11th Street. Initially, service was provided at night time only for lighting purposes, but by 1908, 24-hour service was available.

By 1911, the extremely rapid growth in demand for electricity forced the City to construct a new coal-fired thermal generating plant on Avenue A south of 19th Street (A.L. Cole generating plant). Plant expansions brought the generating capacity to 10,000 kilowatts by 1919.

In 1928, the City sold its power plant to the Saskatchewan Power Commission, which began selling electricity in bulk to the City for distribution to its customers. The plant was the single source of supply for Saskatoon at the time.

The Queen Elizabeth Power Station was constructed by SaskPower in 1959 and is still generating power at its location just south of the Saskatoon Landfill. In the early 1980's, the A.L. Cole plant was then retired.

In the early 1960's, SaskPower continued its expansion and took over many of the municipal utilities in the province, including the City of Regina's utility in 1965. At that time, the City of Saskatoon decided not to sell its electric utility and opted to continue operating to provide electrical services to businesses and residents.

The franchise boundary for the utility was set by provincial legislation based on the 1958 municipal boundaries. The franchise area has not changed significantly with the expansion of the city, and SaskPower serves the portion of Saskatoon outside of this area.

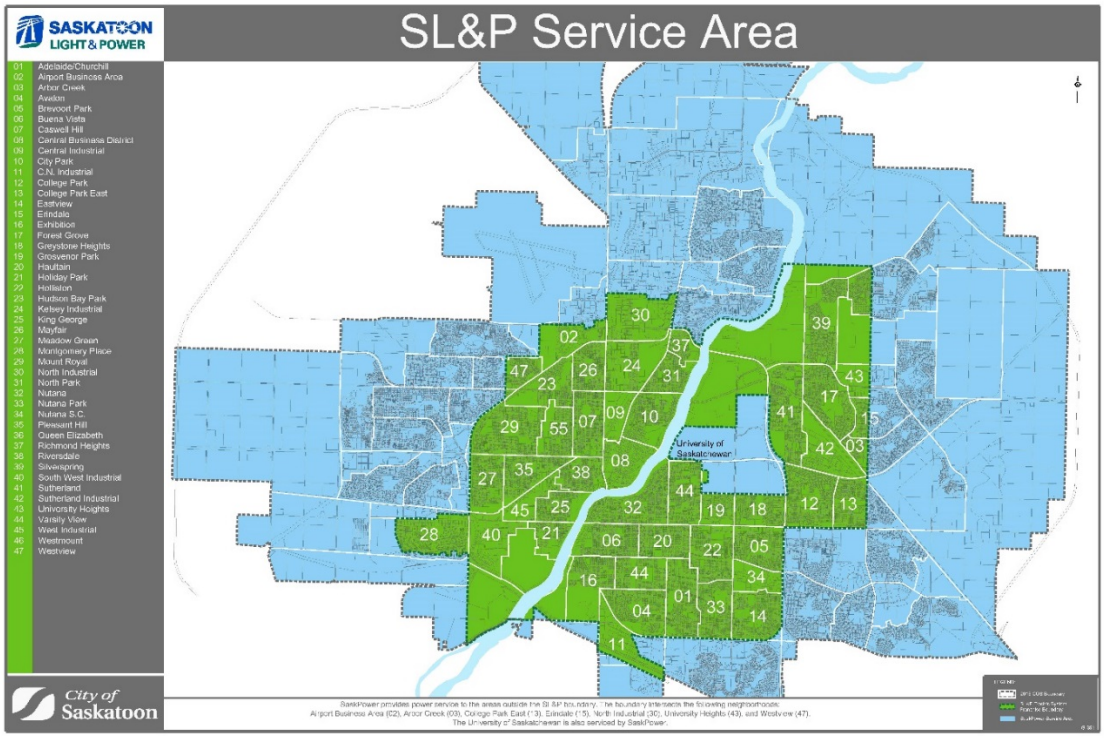
In December 2004, City Council approved Saskatoon Light & Power as the new name for the City's electric utility.

Saskatoon Light & Power is the largest municipal utility in the province and is SaskPower's largest single customer.

In March 2014, Saskatoon Light & Power once again began generating electricity by commissioning the Landfill Gas Generating Station. The 1.63 Megawatt facility produces enough electricity each year to power 1,200 homes. Annual greenhouse gas

emissions from the landfill were reduced by over 50,000 tonnes (the equivalent of removing 10,000 vehicles from Saskatoon's roadways.

10.2 Franchise Boundary



10.3 Lighting Boundary