

# SOUTHLAKE

REGIONAL HEALTH CENTRE



CONSERVATION AND DEMAND  
MANAGEMENT PLAN  
2019-2024





July 2019

**RE: Conservation and Demand Management Plan**

We are happy to confirm the enclosed Conservation and Demand Management Plan for Southlake Regional Health Centre has been approved by our senior team.

The implementation of this plan will continue to coordinate our budgeting, strategic plan, purchasing policy, preventative maintenance plans, environmental management plan, and the policy development processes. A communication plan will also be deployed to convey our energy efficiency commitment and priority to staff, stakeholders, patients and visitors.

Southlake Regional Health Centre staff will carry out a comprehensive review of all business processes and modify them as necessary to incorporate energy efficiency considerations.

Should you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

**Rick Gowrie**

Vice President  
Capital, Facilities and Business Development

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## ABOUT SOUTHLAKE REGIONAL HEALTH CARE & OUR CDM PLAN

Southlake Regional Health Centre (SRHC) is a full-service hospital with a regional, clinically advanced focus. SRHC offers 426 patient beds and accommodates more than 113,000 visits to the Emergency Department, 24,000 in-patient admissions, and 530,000 out-patient visits each year. As a regionally designated site, SRHC is responsible for developing and providing advanced levels of care to the more than 1 million people who reside in York Region, Simcoe County, and in some cases, as far north as Muskoka. We are proud to have a team of more than 3,400 employees, 580 physicians, and 800 volunteers. Combined with our commitment to provide the best possible care, our goal is to make SRHC synonymous with healthcare excellence.

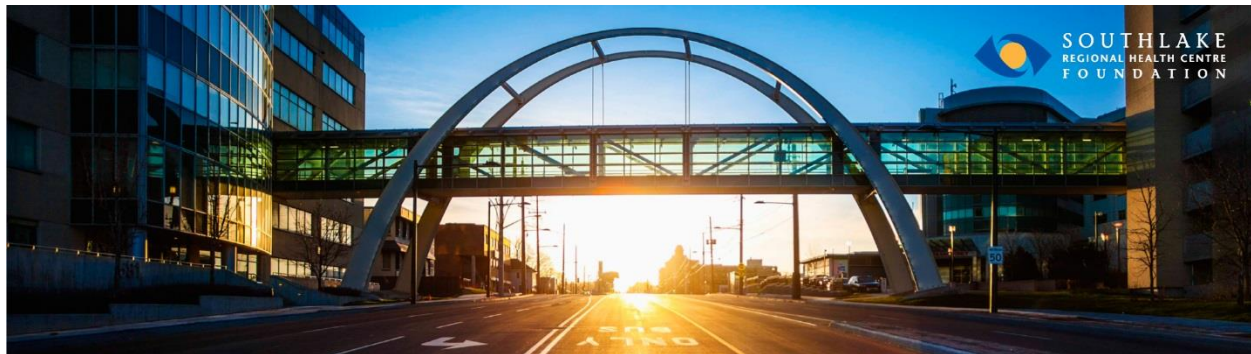
SRHC's Conservation and Demand Management (CDM) plan, which we first completed in 2014, is a step to understanding the impact of our operations on Greenhouse Gas (GHG) emissions, and to take action by setting GHG reduction targets. Both our 2014 and 2019 plans reflect on what we have done, monitor what we are doing, and outline what we are planning to do.

The below table illustrates SRHC's progress towards reducing our annual electricity and natural gas consumption, as well our Greenhouse Gas (GHG) emissions and Energy Use Intensity (EUI). The values from the baseline year (2013) were compared to the last year covered in the previous plan (2018) to quantify our changes over the initial five-year term.

|                      | Electricity | Natural Gas | GHG Emissions | EUI    |
|----------------------|-------------|-------------|---------------|--------|
| <b>2013 vs. 2018</b> | -5%         | +5%         | -34%          | +0.83% |

As we go forward, SRHC will continue to place a focus on:

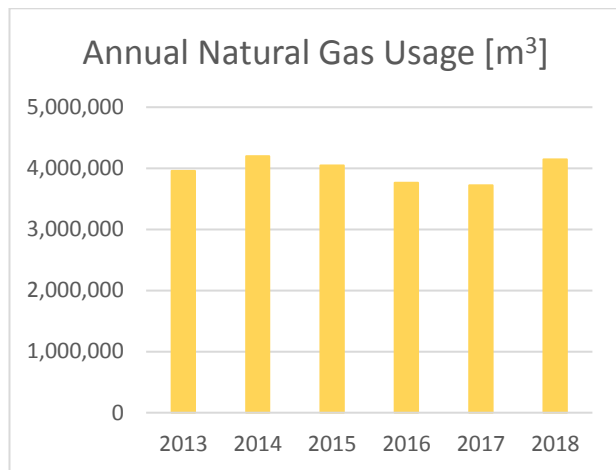
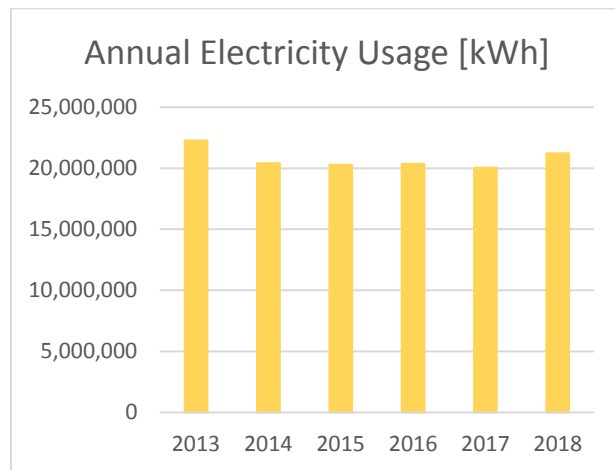
- Setting future performance goals and objectives and actively working towards achieving them;
- Continuous improvement through identification of energy conservation potential;
- Strategic alignment of measure implementation and fiscal constraints; and
- Evaluation, measurement and communication of results achieved.



## ENERGY CONSUMPTION 2013-2018

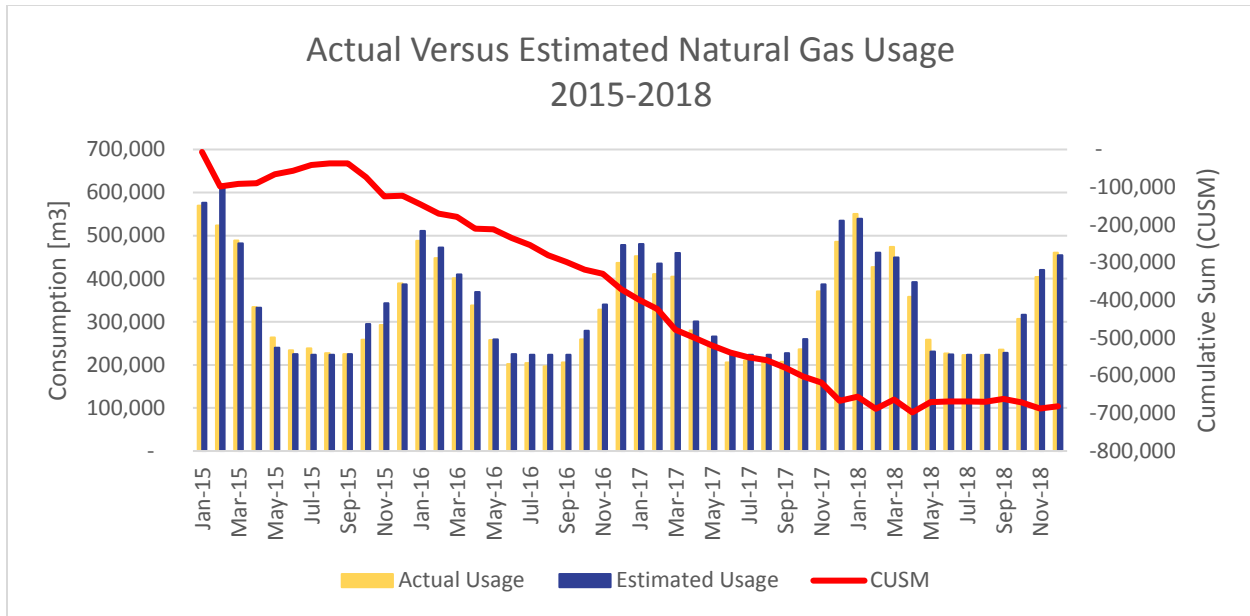
As part of Ontario Regulation 507/18 under the Electricity Act, 1998, SRHC prepares, publishes and makes available to the public our annual energy consumption and resulting greenhouse gas (GHG) production. The following is a summary of these values.

| Year | Floor Space [ft <sup>2</sup> ] | Electricity [kWh] | Natural Gas [m <sup>3</sup> ] | GHG Emissions [kg CO <sub>2</sub> e] | EUI [ekWh/ft <sup>2</sup> ] |
|------|--------------------------------|-------------------|-------------------------------|--------------------------------------|-----------------------------|
| 2013 | 571,339                        | 22,278,844        | 3,959,614                     | 12,522,924                           | 113.29                      |
| 2014 | 571,339                        | 20,411,130        | 4,199,425                     | 10,676,982                           | 114.52                      |
| 2015 | 571,339                        | 20,285,474        | 4,044,040                     | 9,209,196                            | 111.31                      |
| 2016 | 571,339                        | 20,368,692        | 3,765,035                     | 7,943,107                            | 105.86                      |
| 2017 | 571,339                        | 20,030,786        | 3,723,319                     | 7,751,361                            | 103.81                      |
| 2018 | 571,339                        | 21,225,912        | 4,146,402                     | 8,206,353                            | 114.22                      |



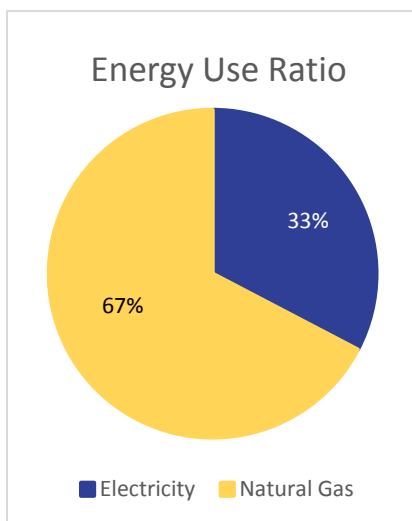
As an interruptible consumer, SRHC was notified that we would be required to curtail our natural gas usage during the extremely cold 2013/2014 winter. Curtailment is an unplanned suspension of gas delivery caused by a physical constraint on the delivery of gas through the pipeline system. To keep our heating systems on line and provide the necessary care services to our patients, SRHC used fuel oil in place of natural gas for the days curtailment was required. The total amount of fuel oil used over the four months was roughly 334,026 L.

SRHC's natural gas consumption was weather normalized to better analyze how our usage has changed over the past five years. Weather normalization uses Heating Degree Days (HDD), or the days in which the hospital needs to be heated, and Cooling Degree Days (CDD), the days in which the hospital is cooled, to estimate what energy consumption should look like given a base year. In this case, 2014 was used as the baseline; the fuel oil consumption was converted to its equivalent meters cubed of natural gas to improve the accuracy of the analysis. The following graph shows the results of the normalization.



The analysis found that, while SRHC’s actual natural gas usage went up by 4%, the hospitals consumption was 681,163 m<sup>3</sup> less than what was expected based on the usage in 2013. This represents a usage that is 4% less than if the hospital had not undergone any CDM initiatives or building improvements.

Analyzing energy use and energy use patterns allows for the identification of areas of inefficiency in operations. Part of this process is setting a baseline for the facility’s energy consumption, and typically involves identifying where and at what rate energy is used, areas of energy waste, and potential energy saving measures. For our first plan, SRHC used 2013 as our baseline as this was the year before our CDM initiatives began. We are now setting 2018 as our new baseline, with the goal of decreasing both our electricity and natural gas usage by 2024.



Currently, SRHC’s energy consumption is about 67% electricity and 33% natural gas. These energy sources are used for some of the following functions:

#### Electricity

- Lighting
- Space cooling
- Fans
- Pumps
- Space heating
- Kitchen and process equipment
- Computers
- Sterilizers

#### Natural Gas

- Reheat
- Central heating coils
- Humidification
- Space heating
- Domestic hot and cold water
- Sterilizers and kitchen equipment



## RESULTS OF OUR ENERGY MANAGEMENT STRATEGIES

SRHC had developed a list of proposed process improvements, program implementation, and projects that were targeted for completion over the past five years. We are happy to report that SRHC successfully completed six significant CDM initiatives that have and will continue to realize electricity and natural gas savings for the foreseeable future. The completed projects are outlined below.

| Southlake Regional Health Centre's CDM Projects 2014-2018 |   |                   |                               |                                      |                  |
|---|---|-------------------|-------------------------------|--------------------------------------|------------------|
| Project Name  | Description   | Electricity [kWh] | Natural Gas [m <sup>3</sup> ] | GHG Emissions [kg CO <sub>2</sub> e] | Savings [\$ /yr] |
| <b>Retrofit of lighting fixtures</b>                      | Replaced 34 T-8 high output bulbs with LED ones.  | 8,637             | -                             | 149                                  | \$1,123          |
| <b>High voltage transformer</b>                           | Replaced the old high voltage transformer with a newer model.   | 154,436           | -                             | 6,534                                | \$11,639         |
| <b>Motion sensors</b>                                     | Installed 25 motion sensors throughout the main hospital building   | 1,373             | -                             | 24                                   | \$178            |
| <b>Steam Trap</b>   | Underwent a steam trap audit and replaced the trap based on the audit's recommendations   | -                 | 55,683                        | 105,274                              | \$16,148         |
| <b>Air Compressor Upgrade</b>                             | Upgraded old facility pneumatic control air compressors to new high efficiency rotary compressors.  | N/A               | N/A                           | N/A                                  | N/A              |
| <b>Replacement of Sterilizers</b>                         | Replaced the facilities 2 out of three of the hospital's sterilizers to new higher efficient models. This resulted in lower operating steam pressure which lowers the facilities overall gas consumption. | -                 | 110,571                       | 209,045                              | \$32,065         |
| <b>TOTAL</b>  |   | <b>164,446</b>    | <b>16,254</b>                 | <b>321,026</b>                       | <b>\$61,153</b>  |



## ENERGY MANAGEMENT VISION

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In 2014 we developed a Vision that spoke to our promises to create an environment where everyone who interacts with us will have an experience that meets or exceeds their expectations. We had recognized that we had to challenge ourselves to consistently deliver on this promise, and we were excited by the innovative solutions we introduced between 2014 and 2018. We have seen the benefits associated with striving to achieve this vision and will continue to work towards further realizing this for SRHC.

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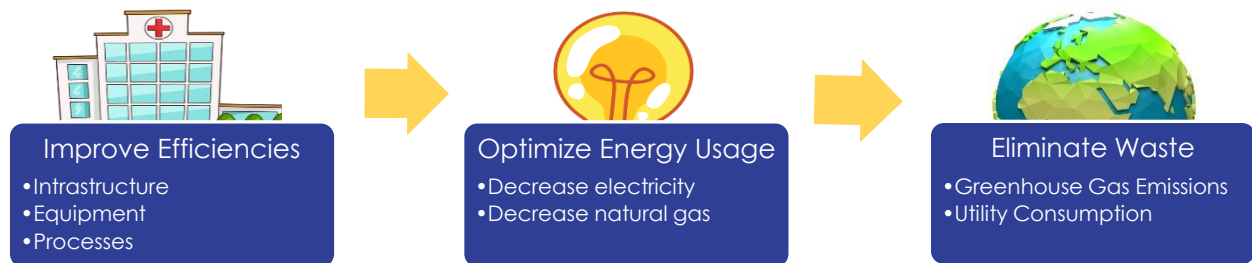
### Our Purpose

Building health communities through outstanding care, innovative partnerships, and amazing people.

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Our Purpose underlines our commitment to working collaboratively with our Patients, Our People, and Our Partners to further SRHC's evolution as a high reliability organization. In line with this, our CDM plan addresses the fiscal, societal and environmental costs and risks associated with energy consumption. SRHC's energy management will continue to display leadership in our community, improve the delivery of our services, and enhance the overall quality of life with respect to the patient services we offer.

SRHC's approach to energy management, as defined in our past plan, is three pronged:



Our plan is designed to meet the current energy needs and obligations of SRHC and to guide the development of an energy management foundation. As with the 2014 plan, this new plan is meant to be a living plan which evolves as SRHC's energy needs are revealed and better understood.



## SRHC'S ONGOING ENERGY MANAGEMENT STRATEGIES

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Continuing from previous plan, SRHC will continue to implement and adhere to the following energy management strategies.

### **Energy Data Management**

SRHC will continue to follow our comprehensive program for collecting and analyzing monthly energy billing information which includes informing Staff about energy consumption. This effort has produced an energy costs and consumption database that has been and will continue to be used for monitoring excessive variations, targeting facility follow-up evaluations, and highlighting areas that could be candidates for improved conservation. This process of energy management will continue to improve SRHC's understanding of the bottom line impact of energy management.

### **Energy Commodities Management**

SRHC has put in place an adaptable energy procurement strategy that allows for the management of the always fluctuating spot market commodity prices. Working with HealthPRO and a third-party energy consultant, SRHC utilizes strategic energy procurement while also obtaining professional insight into utility rates, structures, and demand management.

### **Energy Use in Facilities**

SRHC staff have retained a great deal of knowledge about our facilities' energy use. Engaging hospital staff, seeking their input on where facility improvements can be made and equipping them with the information necessary to make effective energy management decisions has been effective for CDM initiatives over the past five years. Working together with staff has allowed for the implementation of an effective energy procurement process, increased ability to pursue appropriate capital projects, as well as implement successful CDM programs.

### **Equipment Efficiency**

SRHC has and will continue to pursue improvements in energy efficiency of Hospital equipment. This including heating and cooling equipment retrofits, building envelope improvements, and electrical system upgrades. Decisions on infrastructure and equipment improvements will be made based partially on the efficiency and environmental impact, as well as the other benefits the upgrades will bring to the hospital and our patients.

### **Organizational Integration**

Since 2014, SRHC has been working to further enhance energy management practices around the hospital, including the creation of an interdepartmental energy management team, improving energy monitoring and feedback, and providing interactive energy training and awareness. We will continue to work with staff and provide them the necessary tools to

address corporate energy concerns which include budgeting, procurement, conservation and generation.

## **OUR FUTURE CDM ACTIONS**

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### **Building Re-Commissioning**

In addition to the above energy management strategies, SRHC will take action to implement several CDM initiatives. We will continue to place a focus on building re-commissioning, which often sees the greatest energy saving opportunities. This may include improving the scheduling of HVAC equipment, optimizing simultaneous heating and cooling, fan VFD control override, ensuring that boiler controls operate efficiently and fixing malfunctioning sensors. SRHC's efforts to properly re-commission our facilities will significantly help us reach our energy management goals.

### **Energy and Resource Awareness (ERA) Programs**

SRHC has seen success over the past five years from our implementation of ERA programs. It has proved to be an effective means of lowering SRHC's energy usage without any capital costs and with minimal operational expenses. As such, we will continue to promote a fundamental shift in the personal philosophies of staff and facility users towards reducing their energy use. This includes initiatives such as a Turn Off the Lights program and encouraging staff and visitors to unplug background equipment such as kettles and computers when not in use.

### **Energy Management Actions**

SRHC will also strive to complete the following energy CDM projects, funding permitted. Each of the below projects will be in place for the duration of the equipment's/infrastructure's service life, following which the equipment will be replaced again with newer and cleaner technology. A summary of SRHC's future CDM initiatives has been included on the following page. The savings estimates may differ from the actual savings depending on the model or type of equipment/infrastructure upgrade that is completed.

SRHC also has several larger equipment replacements planned for the next five years, funding permitted. These upgrades will be done to replace facility equipment and systems that have reached the end of their service life and will see more efficient models being installed. The reduced energy usage/energy savings of these initiatives will be determined as the projects are completed. The equipment set to be replaced includes:

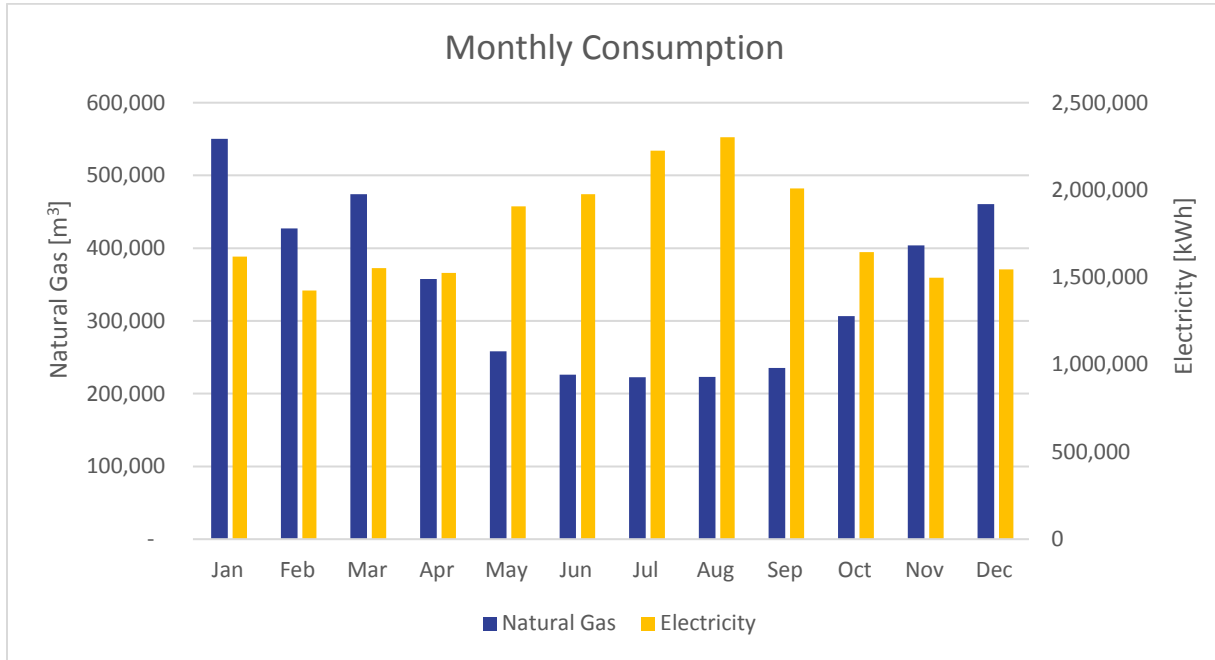
- Steam wall mounted units
- Eastern building air compressor
- Gas fired heater
- Window air conditioning units

### Southlake Regional Health Centre's Future CDM Initiatives

| Action Year  | Project Name                            | Description   | Electricity [kWh] | Natural Gas [m <sup>3</sup> ] | GHG Emissions [kg CO <sub>2</sub> e] | Savings [\$ /yr] |
|--------------|---|---|-------------------|-------------------------------|--------------------------------------|------------------|
| 2019         | Boiler Controls                         | Upgraded controls on the new boiler.  | -                 | 116,099                       | 219,497                              | \$33,669         |
| 2019         | Replacement of Sterilizers              | Finish the final replacement of the third sterilizer.                           | -                 | 55,285                        | 104,523                              | \$16,033         |
| 2019         | Automatic Frequency Drive (AFD) Upgrade | Added AFD's to 3 hospital chillers.   | TBD               | TBD                           | TBD                                  | TBD              |
| 2019         | Exterior Walls – General                | Repair/restoration of exterior walls.   | TBD               | TBD                           | TBD                                  | TBD              |
| 2019         | Exterior Doors – General                | Lifecycle replacement of aged and deteriorated exterior doors at east building. | TBD               | TBD                           | TBD                                  | TBD              |
| 2020         | Interior Lighting Replacement           | Continue the lighting retrofit by switching to LED bulbs.                       | 38,106            | -                             | 659                                  | \$4,953          |
| 2023         | Exterior Lighting Replacement           | Change parking lot and exterior lights to LED bulbs.                            | 12,448            | -                             | 215                                  | \$1,618          |
| 2024         | Power Factor Correction                 | Replace the power factor correction system at end of its service life.          | -                 | -                             | -                                    | \$274,937        |
| <b>TOTAL</b> |   |   | <b>50,554</b>     | <b>171,384</b>                | <b>324,894</b>                       | <b>\$331,210</b> |

## APPENDIX

### A1. SRHC's monthly consumption trends for electricity and natural gas for 2018.



### A2. SRHC's vital signs, corporate statistics, 2013/2014 versus 2017/2018.

|                                 | 2013/2014 | 2017/2018 | Difference |
|---------------------------------|-----------|-----------|------------|
| <b>Inpatient Admission</b>      | 24,782    | 24,833    | +0.2%      |
| <b>Outpatient Visits</b>        | 352,999   | 536,671   | +52%       |
| <b>Emergency Visits</b>         | 98,327    | 113,374   | +15%       |
| <b>Diagnostic Imaging Exams</b> | 369,335   | 347,336   | -6%        |