City of Toronto

2019-2024 Energy Conservation and Demand Management Plan

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Executive Summary

The City of Toronto's 2019-2024 Energy Conservation and Demand Management Plan serves as both a retrospective on the City's prior efforts to reduce energy consumption and greenhouse gas emissions, as well as a blueprint to guide future conservation efforts. As required under regulation 507/18 of the Electricity Act, this report will elucidate upon the following for 604 City of Toronto buildings:

- 2018 energy cost and consumption patterns
- Energy efficiency measures implemented between 2014-2018
- Energy efficiency measures planned for implementation between 2019-2024
- Annual renewable energy generation

The 604 City of Toronto buildings examined for this report consist of over 26 million square feet of indoor space and represent 22 different operational types. In 2018, these facilities collectively consumed over 1.4 billion ekWh in electricity, natural gas, chilled water, and steam consumption and expended over $118 million in energy and water costs.

TransformTO, the City's climate change action plan, commits Toronto to a reduction in greenhouse gas emissions of 80% by 2050 based on 1990 levels. To this end, the City has committed itself to achieving a 40% reduction in energy use in City-owned buildings based on 2017 consumption. In an attempt to meet this target, Toronto spent over $63 million between 2014 and 2018 on structural, mechanical, and electrical energy efficiency measures at 133 facilities. Of the 569 buildings consistently operational between 2013 and 2018, 303 experienced overall energy reductions with an average decrease of 13%. In a continuation of these efforts, this report will describe the City's plan to commit a further $89 million to energy efficiency measures at 191 buildings across a variety of operational types. These efforts will follow a "whole building" or "whole City" approach, which will seek to maximize energy savings by aggressively identifying and targeting all available energy efficiency opportunities within each facility.

Between 2014 and 2018, the City installed 80 solar PV systems to bring the total number of systems for the municipality to 95. Collectively, these solar installations generated almost 18 million kWh of electricity from 2014 to 2018. Most of this electricity was sold back to Toronto Hydro, but future installations will include storage systems so that harnessed electricity can be utilized to directly offset energy consumption and provide back-up power in times of emergency. Toronto is also actively engaged in the investigation, implementation, and refinement of new renewable energy technologies such as geo-exchange and biogas collection.

The City of Toronto recognizes that any energy conservation plan will need to be adaptable and dynamic to account for the ever-changing ecological and political landscapes. Toronto is committed to taking action to effectively and efficiently reduce energy consumption and greenhouse gas emissions in City buildings both now and in the future. Towards this aim, the

City will continue to research and implement innovative measures and approaches in order to create a prosperous, resilient, and sustainable city.

1. Introduction

The City of Toronto is required under regulation 507/18 of the Electricity Act to publish an updated five-year Energy Conservation and Demand Management (ECDM) Plan by July 1st, 2019. This plan has been reviewed and approved by senior management. The first ECDM plan was published in July of 2014, as was then required by Regulation 397/11 of the Green Energy Act.

This report is designed to educate and inform both City employees and the public about the City of Toronto's past and future efforts to reduce energy consumption and stem subsequent greenhouse gas emissions. To that end, this report will describe 2018 energy consumption patterns, renewable energy generation, and previous and future energy efficiency measures undertaken at 604 City of Toronto facilities across 22 operational types.

The Environment and Energy Program Administration Office within the Environment and Energy division collaborated with numerous divisional and agency representatives to collect information about previous and future energy efficiency and renewable energy measures implemented in City buildings. This work was both taxing and time consuming and the Environment and Energy division would like to thank all City employees who contributed their knowledge and expertise to this report.

1.1 Goals and Objectives

1.1.1 TransformTO

In 2017, City Council unanimously approved a set of long-term, low-carbon goals outlined in Toronto's new climate change action plan, TransformTO. Based on 1990 levels, Toronto's greenhouse gas emission reduction targets are as follows:

- 30% by 2020
- 65% by 2030
- 80% by 2050

Furthermore, City Council directed the Deputy City Manager, Corporate Services to implement cross-corporate "Leading by Example" strategies towards achieving these low-carbon goals.

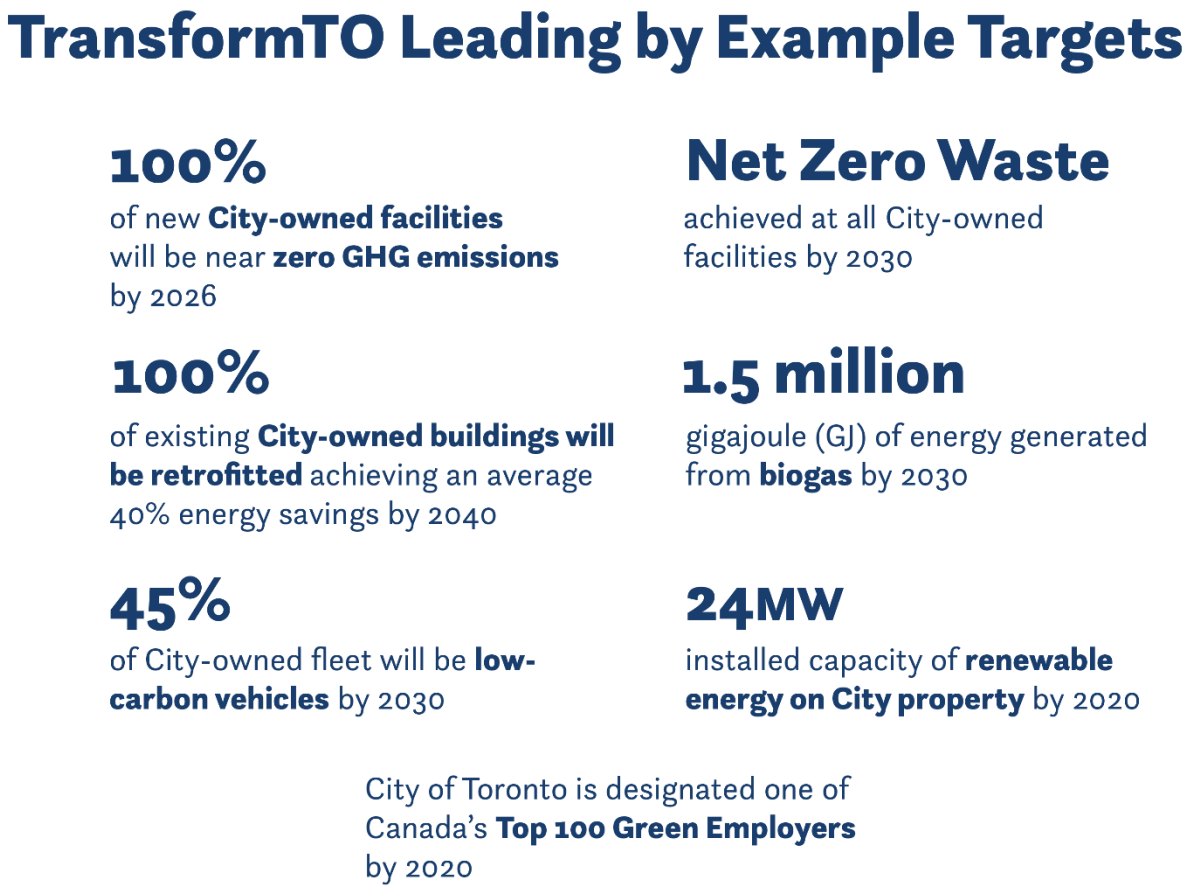


Figure 1: TransformTO Leading by Example Targets

Complete details about targets and action plans outlined in TransformTO can be found here: [City of Toronto - TransformTO.]

1.1.2 Energy Conservation Management Plan

While the previous ECDM plan sought to define individual measures for all City buildings, the current ECDM plan has shifted its focus to a "whole building" or "whole City" approach in order to best fulfill the targets set out by TransformTO. By implementing multiple energy efficiency and renewable energy measures within individual facilities, the City is attempting to enact the greatest impact upon energy consumption within the shortest period of time. This efficient means of performing building retrofits will aid the City of Toronto in achieving its ambitious short and long term goals for reductions in both energy consumption and greenhouse gas emissions.

The City has decided to implement the Energy Service Company (ESCo) model to achieve deep energy reductions at key city facilities. The ESCo model uses private sector industry leaders who specialize in energy auditing, project design, and construction services as a one-stop-shop for

delivering energy savings. This approach will maximize reductions in energy consumption, operating costs, and greenhouse gas emissions.

The City of Toronto has also partnered with local utility providers and the independent electricity system operator (IESO) to hire an embedded energy manager who helps to uncover energy savings opportunities, complete project business cases, and maximize utility incentive programs for energy saving projects.

For previous and future projects, the City applies a recoverable debt funding model to facility energy retrofit projects. This model allows project teams to create business cases to support up-front investment in energy conservation measures. The business case generated would need to illustrate a payback within 20 years on the investment, based on future energy cost savings. As the accounting for greenhouse gas emissions is integrated into City capital decision making, the business case for deep energy retrofits will improve and the solutions that we need to tackle runaway climate change will become more accepted and implemented.

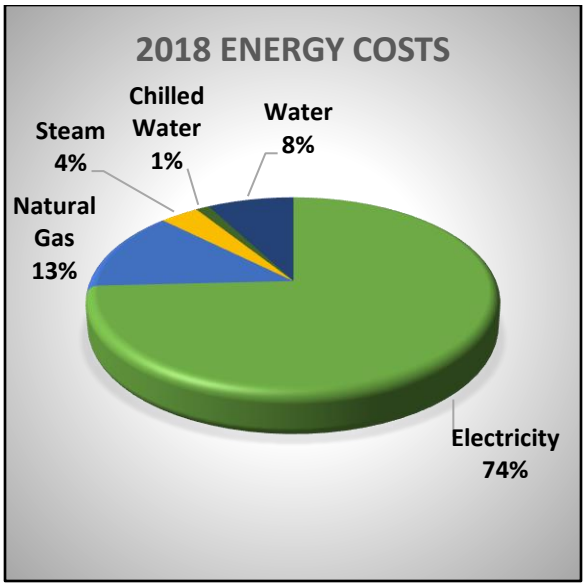
The City is actively seeking and developing both internal and external relationships to facilitate the work required to achieve TransformTO's targets. For example, the creation of CreateTO, which has a mandate to undertake a strategic city-wide approach to the real estate portfolio and manage land use strategy, planning, and city buildings. CreateTO represents an excellent opportunity to find efficiencies and reduce emissions in municipal buildings.

1.2 2018 Energy Use and Costs

The City of Toronto is reporting on 604 buildings with a floor area of over 26 million square feet. This is an expansion in scope upon the previous Energy Conservation and Demand Management Plan, which reported on 528 City buildings. These buildings have been separated by operational type in order to better understand the unique energy profiles within the City's building portfolio. Electricity, natural gas, chilled water, and steam are utilized to varying degrees throughout the City and will be converted from their standard units of measure to equivalent kilowatt hours (ekWh) in order to allow for fair comparison between utilities. Water cost will be reported, but water cannot be converted to ekWh as it does not have an energy component and will therefore not be included in usage analysis.

Note that under the scope of this report, only indoor space will be investigated. For a total accounting of energy use and greenhouse gas emissions for all City-owned property, both indoor and outdoor, see the City of Toronto Open Data Catalogue.

Total 2018 energy use and costs are summarized below.



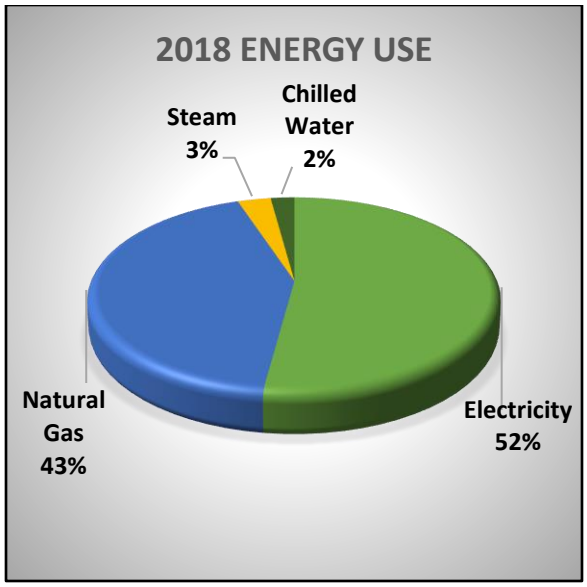


Figure 2: 2018 Energy Use and Costs – All Buildings

In 2018 the City of Toronto spent over $118 million on energy and water costs and consumed over 1.4 billion ekWh in electricity, natural gas, steam, and chilled water consumption. Note that electricity comprised the majority of both costs and consumption for City facilities at 74% and 52%, respectively. Energy use and costs across operational types are summarized below.

Table 1: 2018 Energy Use and Costs – All Buildings

Facility Type	# of Facilities	Total Indoor Area (ft^2)	Electricity Use (kWh)	Natural Gas Use (m^3)	Steam Use (mlb)	Chilled Water Use (TonHr)	Total Energy Use (ekWh)	Total Energy Cost (including water)
Administrative Offices	39	4,187,209	66,515,949	3,086,218	75,763	4,535,491	141,003,266	$15,468,816
Ambulance Stations	30	313,613	6,017,587	686,598	N/A	N/A	13,118,178	$1,212,546
Animal Centres	3	32,637	1,043,877	138,588	N/A	N/A	2,477,113	$233,489
Child Care Facilities	13	96,593	1,256,792	134,494	N/A	N/A	2,647,689	$266,993
Community Centres	75	1,361,288	19,309,653	2,339,596	N/A	N/A	43,505,048	$4,268,454
Cultural Facilities	21	357,746	8,298,985	577,487	N/A	N/A	14,264,625	$1,753,635
Fire Stations	90	882,791	10,535,997	2,171,307	N/A	N/A	32,990,998	$2,516,771
Greenhouses	6	150,265	1,326,752	1,159,434	1,004	N/A	13,670,261	$550,940
Indoor Recreational Facilities	20	807,400	19,309,321	2,225,051	N/A	N/A	42,320,131	$4,634,111
Indoor Sports Arenas	26	916,684	18,028,483	1,657,381	N/A	N/A	35,168,620	$4,190,419
Indoor Swimming Pools	28	1,019,390	18,111,038	3,260,303	N/A	N/A	51,828,115	$4,654,932
Long-Term Care Homes	10	1,622,273	31,027,183	3,727,001	N/A	N/A	69,570,709	$5,354,223
Parking Garages	10	1,236,319	12,601,689	7,833	N/A	N/A	12,682,696	$2,036,384
Performing Arts Centres	3	431,805	5,910,412	154,722	9,098	N/A	10,707,548	$1,514,521
Police Stations	36	2,397,122	40,363,050	3,345,403	N/A	2,070,742	82,240,933	$7,610,386
Public Libraries	88	1,740,380	32,846,417	2,290,981	N/A	N/A	56,539,060	$6,316,463

Facility Type	# of Facilities	Total Indoor Area (ft^2)	Electricity Use (kWh)	Natural Gas Use (m^3)	Steam Use (mlb)	Chilled Water Use (TonHr)	Total Energy Use (ekWh)	Total Energy Cost (including water)
Sewage Treatment Plants	4	880,488	218,406,613	16,557,831	N/A	N/A	389,642,734	$31,480,933
Shelters	12	325,255	5,369,290	930,233	N/A	N/A	14,989,481	$1,193,237
Storage Facilities	79	4,669,588	62,811,946	14,339,674	N/A	N/A	211,108,555	$14,672,464
Transfer Stations	7	595,394	18,207,582	573,761	N/A	N/A	24,141,246	$2,708,102
Transit Hub	1	1,299,836	14,804,426	405,548	39,449	2,358,017	41,151,931	$4,005,119
Water Treatment Plants	4	906,623	150,333,802	478,127	N/A	N/A	155,278,448	$15,419,905

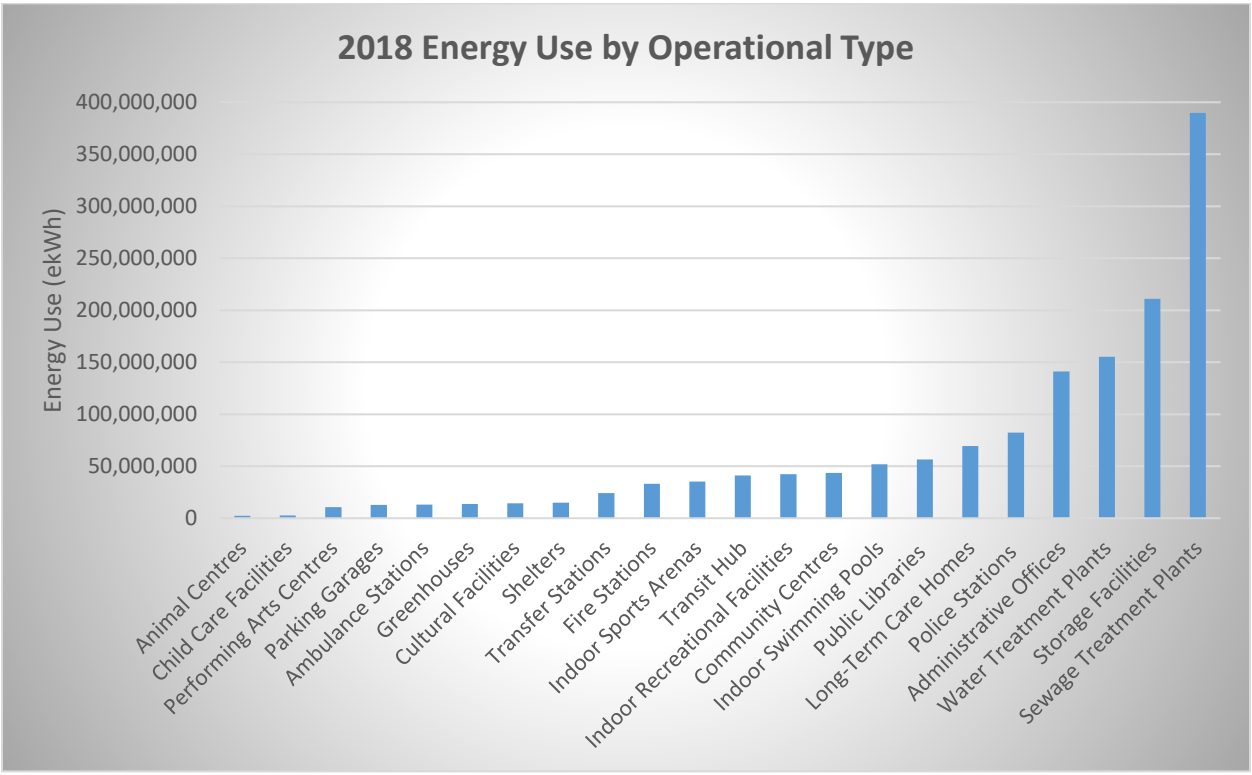


Figure 3: 2018 Energy Use by Operational Type

The four sewage treatment plants collectively consume half a billion ekWh of energy annually and comprise 36% of the total energy use for the City's portfolio. Of the 22 operational types, sewage treatment plants, storage facilities, water treatment plants, and administrative offices all consume over 100,000,000 ekWh of energy annually. Future energy conservation efforts will need to target the City's highest consumers in order to achieve the ambitious reduction goals outlined in TransformTO.

Energy use patterns can also be evaluated by utilizing energy use intensity (EUI), which analyzes energy use as a function of building size. This metric allows for more meaningful comparison

between buildings of varying size, but similar operational type. In general, a lower EUI indicates higher energy efficiency within a building.

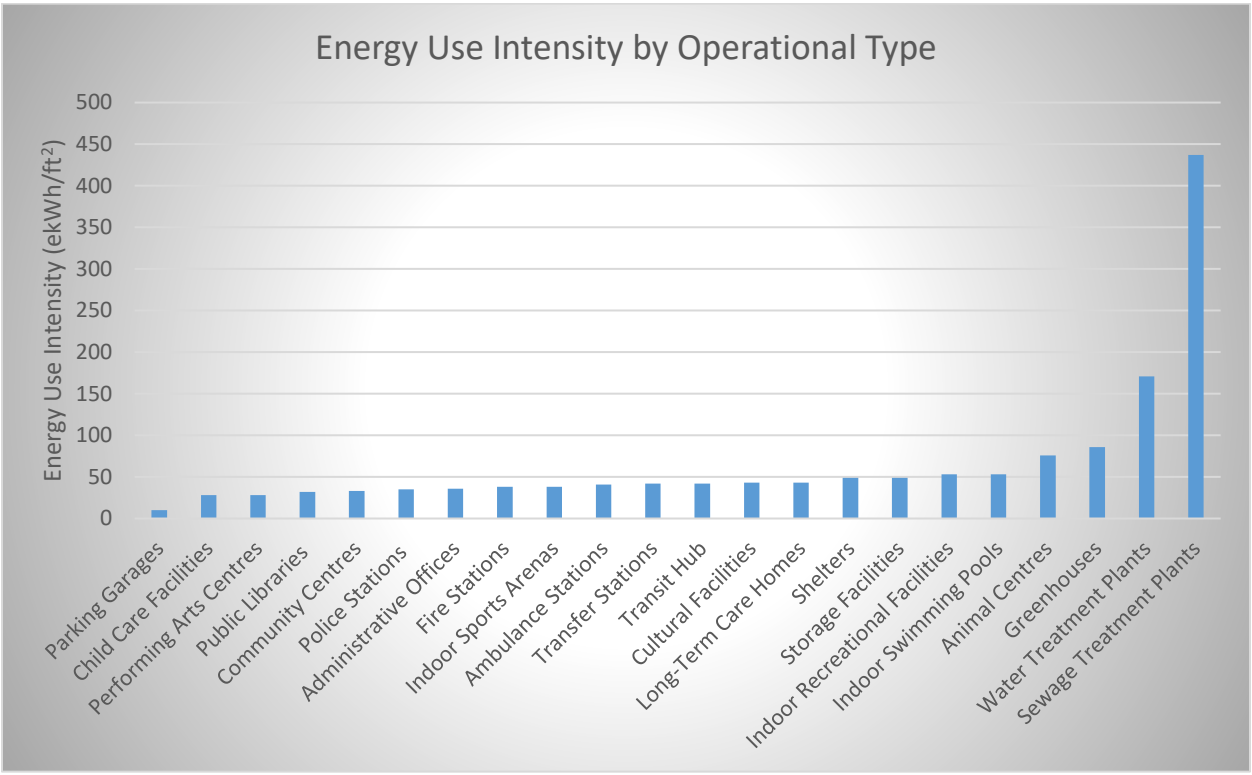


Figure 4: 2018 Average Energy Use Intensity by Operational Type

All City of Toronto operational types consume under an annual average of 50 ekWh/ft^2 with the exception of indoor recreational facilities, indoor swimming pools, animal centres, greenhouses, water treatment plants, and sewage treatment plants. Note that several of these sites have uniquely high natural gas requirements due to pool heating, crematorium use, and greenhouse heating.

1.3 Methodology

Energy costs and consumption are derived from utility bills that are received and processed by the Environment and Energy Division for all City-owned properties. This information is then uploaded to the City's energy management software, which allows for detailed analysis across a variety of measures.

Energy efficiency measures presented in this report have been grouped into the following types:

- Structural
    - Example: Roof replacements, exterior wall repairs
- Electrical
    - Example: Lighting retrofits

- Mechanical
    - Example: Building Automation System installations, HVAC upgrades

All relevant information on project measures, costs, and savings have been provided where such information is available. For future projects, it is assumed that their implementation is dependent upon continued budgetary commitments and other logistical considerations.

Natural gas and electricity emission factors are provided by the Canadian Federal government, which can be found here: National Inventory Report. Steam and chilled water emission factors are provided directly by the Enwave Energy Corporation

When calculating projected cost savings from energy reduction measures, 2018 utility rates are used to estimate cost savings. The average utility rates are as follows:

- Electricity: : 0.147/kWh
- Natural gas: 0.271/m^3
- Water: 3.671/m^3
- Steam: 37.846/mlb
- Chilled water: 0.190/Ton Hr

2. Renewable Energy

2.1 Solar Photovoltaic (PV)

Solar PV technology uses solar cells to convert sunlight directly into electricity.

The City has implemented numerous types of Solar PV systems, including:

- Rooftop ballasted systems
- Rooftop roof penetrated systems
- Solar carport systems
- Building integrated solar systems where solar panels are integrated into the building envelope such as windows and roofs (planned for future implementation)

Almost all solar PV systems installed to date were enrolled under Ontario's Feed-in Tariff program (FIT/microFIT) by which the province procures renewable energy from generation facilities such as Toronto Hydro.

Between 2014 and 2018, the City of Toronto operated 95 solar PV systems with a combined system capacity of 7,696.6 kW and a total generation for this time period of 17,994,875 kWh or 3,598,975 kWh annually.

Table 2: Current City of Toronto Solar PV Systems

Location	Address	System Size (kW)	Energy Generated 2014 2018 (kWh)
#11 Police Division	2054 Davenport Rd.	10	21,751
#14 Police Division	350 Dovercourt Rd.	10	38,348
2 Church Street Parking	2 Church St.	21	41,248
Agincourt Arena and Rec Centre	31 Glen Watford Dr.	48	286,438
Albion Arena	1501 Albion Rd.	140	139,929
Albion Library	1515 Albion Rd.	40	22,034
Albion Pool & Health Club	1485 Albion Rd.	49.9	64,222
Amesbury Arena	155 Culford Rd.	130	508,122
Ancaster Child Care Centre	45 Ancaster Rd.	10	11,088
Angela James Arena	165 Grenoble Dr.	100	107,223
Annette Rec Centre	333 Annette St.	10	30,052
Baycrest Arena	160 Neptune Dr.	140	52,141
Bayview Arena	3230 Bayview Ave.	100	65,658
Beaches Rec Centre	6 Williamson Rd.	10	31,936
Bendale Library	1515 Danforth Rd.	10	7,301
Bentworth Park Yard	140 Bentworth Ave.	80	101,429
Bermondsey Yard	25 Old Eglinton Ave.	50	19,289
Birchmount Parks Yard	101 Ridgetop Rd.	49.9	59,672
Brentwood Library	36 Brentwood Rd. N	10	8,249
Centennial Rec Centre (Ice Galaxy)	1967 Ellesmere Rd.	130	206,245
Central Equipment Yard	1026 Finch Ave. W	500	618,583
Clairlea Park	45 Fairfax Cres.	100	148,688
Commander Park Community Centre	140 Commander Blvd.	240	311,390
Cummer Arena	6000 Leslie St.	100	400,732

Location	Address	System Size (kW)	Energy Generated 2014 2018 (kWh)
Danforth Coxwell Library	1675 Danforth Ave.	10	22,010
Disco Transfer Station	120 Disco Rd.	100	368,774
Disco Yard	150 Disco Rd.	300	1,151,593
Don Montgomery	2467 Eglinton Ave. E	240	276,259
Dyas Road	18 Dyas Rd.	100	146,991
East Service Building	1076 Ellesmere Rd.	10	32,401
East York Arena	888 Cosburn Ave.	130	128,387
East York Civic Centre	850 Coxwell Ave.	30	117,667
Edithvale Community Centre	7 Edithvale Dr.	10	49,464
Election Services Building	89 Northline Rd.	140	172,146
Ellesmere Yard	1050 Ellesmere Rd.	10	37,893
EMS Station #17	643 Eglinton Ave. W	10	29,070
EMS Station #33	760 Dovercourt Rd.	4	25,256
EMS Station #38	259 Horner Ave.	10	34,955
EMS Station #44	887 Pharmacy Ave.	10	36,513
Etobicoke Olympium	590 Rathburn Rd.	150	505,048
F.J. Horgan Filtration Plant	201 Copperfield Rd.	86.4	119,559
Fairbank Memorial Rec Centre	2213 Dufferin St.	10	31,514
Fairfield Senior Centre	80 Lothian Ave.	10	17,817
Fire Station 145	20 Beffort Rd.	10	9,490
Fire Station 334	339 Queens Quay W	3.2	13,972
Fire Station 413	1549 Albion Rd.	10	9,263
Fire Station 415	2120 Kipling Ave.	10	34,739
Fire Station 424	462 Runnymede Rd.	1.2	1,409
Fire Station 426	140 Lansdowne Ave.	10	9,580
Fire Station 441	947 Martin Grove Rd.	10	29,236
Gord & Irene Arena and Rec Centre	2650 Finch Ave. W	100	87,315
Goulding Arena & Rec Centre	45 Goulding Ave.	75	442,140
Grandravine Arena & Rec Centre	25 Grandravine Dr.	100	647,323
Gwendolen Tennis Clubhouse	3 Gwendolen Cres.	10	34,400
Habitant Arena	3383 Weston Rd.	120	52,325
Herbert Carnegie Centennial Arena	580 Finch Ave. W	240	195,553
Humber Bay Park	2225 Lakeshore Blvd. W	10	33,939
Ingram Works Yard	86 Ingram Dr.	100	127,653
Jane Sheppard Library	1906 Sheppard Ave. W	10	8,249
King St. Garage	1116 King St. W	175	693,063
Kipling Acres	2233 Kipling Ave.	225	574,049
Malvern Community Centre	30 Sewells Rd.	210	1,397,881
McCormick Rec Centre	66 Sheridan Ave.	175	640,984
McGregor Park Community Centre	2231 Lawrence Ave. E	75	133,350
McGregor Park Community Centre	2231 Lawrence Ave. E	120	549,500
Mimico Arena	31 Drummond St.	62	337,587
Mitchell Field Arena	89 Church Ave.	120	131,510
Mount Dennis Library	1123 Weston Rd.	10	8,999
Neilson Park Creative Arts	56 Neilson Dr.	10	50,723
North York Animal Centre	1300 Sheppard Ave. W	10	12,727

Location	Address	System Size (kW)	Energy Generated 2014 2018 (kWh)
Oriole Community Centre	2975 Don Mills Rd.	220	551,449
Palmerston Library	560 Palmerston Ave.	10	7,434
Parkway Forest Community Centre	55 Forest Manor Rd.	80	93,076
Parliament Library	269 Gerrard St. E	10	11,008
Police Academy	70 Birmingham St.	216	528,482
Police Academy	70 Birmingham St.	200	277,662
Police Garage	18 Cranfield Rd.	150	265,094
Property Bureau	799 Islington Ave.	150	534,662
Ramsden Yard	1008 Yonge St.	10	9,374
Roding Arena & Rec Centre	600 Roding St.	75	482,479
S. Walter Stewart Library	170 Memorial Park Ave.	10	9,945
Scarborough Civic Centre	150 Borough Dr.	100	105,765
Scarborough Transfer Station	1 Transfer Pl.	300	427,023
Scarborough Village Community Centre	3600 Kingston Rd.	130	168,413
Teaching Kitchen	105 Colborne Lodge Dr.	4	5,174
Ted Reeve Community Arena	175 Main St.	130	115,199
Traffic Services and Garage	9 Hanna Ave.	50	126,211
Victoria Village Arena	190 Bermondsey Rd.	90	512,564
Wallace Emerson Community Centre	1260 Dufferin St.	100	72,693
Warden Hilltop Community Centre	25 Mendelssohn St.	40	65,766
Warden Hilltop Community Centre	25 Mendelssohn St.	10	46,486
York Civic Centre	2700 Eglinton Ave. W	10	43,778
York Community Centre	115 Black Creek Dr.	10	6,116
York Mills Arena	2539 Bayview Ave.	75	597,574
York Woods Library	1785 Finch Ave. W	46	59,404
Total		**7,696.6**	**17,994,875**

For annual generation at each site, see Appendix A: Renewable Energy.

Between 2019 and 2024, the City has plans to install a further 104 solar PV systems with a capacity of 8,497 kW. Note that the system size for many of these installations is still to be determined.

Table 3: Proposed City of Toronto Solar PV Installations (2019-2024)

Location	Address	System Size (kW)
#13 Police Division	1435 Eglinton Ave. W	36
#15 Police Division	275 Manitoba Dr.	TBD
#31 Police Division	40 Norfinch Dr.	45
#32 Police Division	30 Ellerslie Ave.	TBD
#42 Police Division	242 Milner Ave.	TBD
#51 Police Division	51 Parliament St.	TBD
#55 Police Division	101 Coxwell Ave.	TBD
Albion Child Care Centre	1545 Albion Rd.	28
Albion Pool & Health Club	1485 Albion Rd.	210

Location	Address	System Size (kW)
Ambulance Headquarters	4330 Dufferin St.	440
Amesbury Park	1501 Lawrence Ave. W	110
Bartonville Park	5 Bartonville Ave. E	TBD
Bering Yard	320 Bering Ave.	250
Burrows Hall Community Complex	1081 Progress Ave.	290
Castelfield Yard	1401 Castleview Ave.	TBD
Centennial Park	5429 Eglinton Ave. W	172
Centennial Park Arena	156 Centennial Park Rd.	1200
Centennial Rec Centre (Ice Galaxy)	1967 Ellesmere Rd.	840
Chris Tonks Arena	95 Black Creek Dr.	120
City Clerk's Office	88 Sunrise Ave.	154
City Kids Child Care Centre	34 Bathurst St.	TBD
Cummer Arena	6000 Leslie St.	310
Danforth Child Care Centre	1125 Danforth Ave.	20
Don Mills Arena	1030 Don Mills Rd.	TBD
Don Montgomery	2461 Eglinton Ave. W	350
Don Valley Golf Course Clubhouse	4200 Yonge St.	10
East York Civic Centre	850 Coxwell Ave.	210
East York Curling Club	901 Cosburn Ave.	65
Eastern & Booth Blocks	433 Eastern Ave.	TBD
Eastview Neighbourhood Community Centre	86 Blake St.	TBD
Edithvale Community Centre	7 Edithvale Dr.	180
Edwards Gardens	777 Lawrence Ave. E	10
Ellesmere Yard	1050 Ellesmere Rd.	130
Emery Works Yard	61 Toryork Dr.	100
EMS Multi-Station #1	1330 Wilson Ave.	80
EMS NE District Office	2430 Lawrence Ave. E	10
EMS NW District Office & Garage	50 Tryork Dr.	TBD
EMS Station #12	1535 Albion Rd.	10
EMS Station #13	555 Martin Grove Rd.	20
EMS Station #21	887 Pharmacy Ave.	TBD
EMS Station #22	2900 Lawrence Ave. E	TBD
EMS Station #31	4219 Dundas St. W	TBD
EMS Station #43	126 Pape Ave.	10
EMS Station #45	135 Davenport Rd.	TBD
Fairfield Senior Centre	80 Lothian Ave.	48
Falstaff Community Centre	50 Falstaff Ave.	60
Fenside Arena	30 Slidell Cres.	TBD
Fire Services - East Command Office	3 Dhome Ave.	100
Fire Station 134	16 Montgomery Ave.	10

Location	Address	System Size (kW)
Fire Station 143	1009 Sheppard Ave. W	10
Fire Station 213	7 Lapsley Rd.	22
Fire Station 231	740 Markham Rd.	TBD
Fire Station 234	40 Coronation Dr.	10
Fire Station 235	200 Bermondsey Rd.	25
Fire Station 243	4560 Sheppard Ave. E	10
Fire Station 245	1600 Birchmount Rd.	10
Fire Station 315	132 Bellevue Ave.	TBD
Fire Station 321	231 Mcrae Dr.	TBD
Fire Station 325	475 Dundas St. E	22
Fire Station 331	33 Claremont St.	TBD
Fire Station 332	260 Adelaide St. W	TBD
Fire Station 344	240 Howland Ave.	TBD
Fire Station 423	358 Keele St.	TBD
Fire Station 426	140 Lansdowne Ave.	TBD
Fire Station 431	308 Prince Edward Dr.	16
Fire Station 435	130 Eighth St.	TBD
Forest Hill Community Centre	666 Eglinton Ave. W	90
Greenwood Park	150 Greenwood Ave.	TBD
Heron Park Community Centre	292 Manse Rd.	190
Horner Senior Centre	320 Horner Ave.	10
Jimmie Simpson Rec Centre	870 Queen St. E	105
John Booth Memorial Arena	230 Gosford Blvd.	TBD
Kennedy House Youth Shelter	1076 Pape Ave.	10
Lambton Park Arena	4100 Dundas St. W	100
L'Amoreaux Park - Sports Centre Complex	100 Silver Springs Blvd.	TBD
Long Branch Arena	75 Arcadian Cir.	240
Malvern Child Care Centre	1321 Neilson Rd.	TBD
Metro Track and Field	4700 Keele St.	500
Mooredale House	146 Crescent Rd.	TBD
Morningside Library	4279 Lawrence Ave. E	TBD
Morningside Yard	891 Morningside Ave.	TBD
Mount Dennis Child Care Centre	New building – Location TBD	TBD
Nashdene Yard	70 Nashdene Dr.	179
Oakridge Senior's Bocce Club	6 Thora Ave.	10
O'Connor Early Learning & Child Care Centre	1386 Victoria Park Ave.	23
Phil White Arena	443 Arlington Ave.	TBD
Pine Point Arena	15 Grierson Rd.	280
Police - Intelligence Bureau	2 Dyas Rd.	TBD
Police - Public Order	4610 Finch Ave. E	TBD

Location	Address	System Size (kW)
Police Dog Services	44 Beechwood Dr.	10
Police Emergency Task Force	300 Lesmill Rd.	43.6
Police Marine HQ	259 Queens Quay W	72
Port Union Community Centre	5450 Lawrence Ave. E	190
Regent Park Child Care Centre	40 Regent St.	23
Rexdale Community Hub	21 Panorama Crt.	228
Richview Library	1806 Islington Ave.	75
St Albans Boys & Girls Club	843 Palmerston Ave.	TBD
Stephen Leacock Community Centre	2525 Birchmount Rd.	220
Thistletown Community Centre	925 Albion Rd.	92
Thomson Park South Clubhouse\Washroom	1005 Brimley Rd.	10
Upper Yonge Village Child Care Centre	14 St. Clemens Ave.	TBD
West Deane Park	410 Martin Grove Rd.	5.6
West Mall Outdoor Rink	370 The West Mall	10
Willowridge Child Care Centre	30 Earldown Dr.	28

Furthermore, the City has plans to install solar carports on all surface parking lots and on the top floor of all parking garages by 2040, where feasible.

2.2 Solar – Thermal Water Technology

Solar thermal collectors harvest sun energy in the form of radiated heat and are utilized by the City of Toronto at 16 sites for domestic hot water heating and indoor/outdoor pool heating.

Table 4: Current City of Toronto Solar Thermal Water Systems

Location	Address	System Size (kW)
Agincourt Arena & Rec Centre	31 Glen Watford Dr.	166
Albion Pool & Health Club	1485 Albion Rd.	67
Albion Pool & Health Club	1485 Albion Rd.	67
Birchmount Community Centre	93 Birchmount Rd.	245
Centennial Rec Centre	2694 Eglinton Ave. W	166
Fire Station 212	8500 Sheppard Ave. E	Unavailable
Fire Station 231	740 Markham Ave.	Unavailable
Fire Station 426	140 Lansdowne Ave.	Unavailable
Gihon Springs Outdoor Pool	75 Gihon Spring Dr.	87
Jimmie Simpson Rec Centre	870 Queen St. E	280
Park Lawn Outdoor Pool	340 Park Lawn Rd.	84
Rotary Park Outdoor Pool	25 Eleventh St.	93
True Davidson Acres	200 Dawes Rd.	100
Union Station	41 Front St.	Unavailable
Warden Hilltop Community Centre	25 Mendelssohn St.	Unavailable

Location	Address	System Size (kW)
Weston Lions Outdoor Pool	2125 Lawrence Ave. W	50

Along with energy efficiency measures and other types of renewable energy, solar thermal water technology will be utilized at the new Mount Dennis Child Care Centre to achieve its proposed net zero status.

2.3 Solar – Thermal Air Technology

Solar thermal for air heating, or "solar walls", have been used to preheat the outdoor air for a number of City facilities, mainly at maintenance garages and Toronto Water facilities.

Table 5: Current City of Toronto Solar Thermal Air Systems

Location	Address	System Size (kW)
Armour Heights Community Centre	2140 Avenue Rd.	120
Eastern Avenue Yard	843 Eastern Ave.	Unavailable
Forensic Service, Store, & Garage	2050 Jane St.	49
Scadding Court Community Centre	707 Dundas St. W	115

2.4 Geo-exchange

Geo-exchange systems are also known as geothermal or ground/air-source heat pump systems. Geothermal energy can be captured from the absorbed heat in the ground, atmosphere, oceans, lakes, and rivers. Heating and cooling of the buildings is achieved by using the heat pump technology to take advantage of the temperature differential between outside air, the ground or water and the inside of the building. If used for offsetting natural gas consumption, it has the highest greenhouse gas reduction potential. Financial viability of this technology is challenging due to sizeable capital investments coupled with the low cost of natural gas.

Geo-exchange systems are currently active at eight City of Toronto locations.

Table 6: Current City of Toronto Geo-Exchange Systems

Location	Address
Coronation Park	711 Lakeshore Blvd. W
McGregor Park Community Centre	2231 Lawrence Ave. E
EMS Multi-Function Station #1	1300 Wilson Ave.
#11 Police Division	2054 Davenport Rd.
#14 Police Division	350 Dovercourt Rd.
Police Academy	70 Birmingham St.
Warden Hilltop Community Centre	25 Mendelssohn St.
Yonge Hearts Child Care Centre	5176 Yonge St.

Within the next five years, the City of Toronto has plans to install geo-exchange systems at a further seven locations.

Table 7: Proposed City of Toronto Geo-Exchange Systems (2019-2024)

Location	Address
St. Lawrence Market North	125 The Esplanade
Mount Dennis Child care centre	New building - Location TBD
Ambulance Headquarters	4330 Dufferin St.
East York Civic Centre	850 Coxwell Ave.
Waterfront Neighbourhood Centre	627 Queen's Quay W
NEW Birchmount Residence	3306 Kingston Rd.
Etobicoke Olympium	590 Rathburn Rd.

Going forward, geo-exchange will likely be the technology of choice, combined with solar PV systems for new buildings, in order to achieve City's GHG emissions reduction goals.

2.5 Solar PV & Storage

The City of Toronto is currently investigating the feasibility of installing solar PV systems combined with a battery storage system. A pilot project will be initiated at EMS Station #46, which will consist of a 9.8kW solar PV system combined with a 27kWh storage system. This system will be designed to provide 12 hours minimum of run time during a power outage. If successful, these systems will have the following benefits:

- Energy that has been collected and stored can be used to directly offset the usage of the building, which will lower overall utility costs.
- In emergency facilities, such as EMS and fire stations, these storage systems can act as back-up generators. This will allow the City to phase out natural gas generators currently in use and thereby significantly reduce greenhouse gas emissions.
- Increase the resiliency of associated buildings by providing shelter and comfort during extreme weather events.

The City has plans to implement a similar system at the Waterfront Neighbourhood Centre and is actively exploring installation in other facilities based on the results of these pilot programs.

2.6 Biogas

Biogas can be captured from landfill gas or by processing organic waste through anaerobic digestion and utilized to generate energy. At the Keele Valley Landfill, approximately 125,000,000 kWh of electricity was generated as a result of capturing gas between 2014 and 2018.

At present, the Solid Waste Management Services division is implementing its first Renewable Natural Gas (RNG) project at the Dufferin Organics Processing Facility (DOPF). This project will upgrade the biogas generated from processing Green Bin organic waste into RNG that can be injected into the natural gas grid. Among its many potential end uses, RNG can be used to fuel the City's fleet of waste collection vehicles, creating a closed loop model where garbage trucks are powered by the waste they collect. The first RNG facility is expected to be commissioned

and fully operational by January 2020. Solid Waste Management Services Division is also exploring opportunities to implement RNG at additional waste management sites.

2.7 Deep Lake Water Cooling

Deep Lake Water Cooling, provided by Enwave Energy Corporation, uses the cold water deep within Lake Ontario to provide a renewable source of building cooling to replace conventional chillers and cooling towers. Chilled water is currently used for building cooling five City of Toronto locations

Table 8: Current City of Toronto Deep Lake Water Cooling Systems

Location	Address
City Hall	100 Queen St. W
Metro Hall	55 John St.
Old City Hall	60 Queen St. W
Union Station	41 Front St.
Police Headquarters	40 College St.

3. Administrative Offices and Related Facilities

3.1 Energy Use and Building Characteristics

3.1.1 Building Characteristics

The City of Toronto is reporting on 39 administrative offices with a total area of 4,187,209 ft^2.

Table 9: City of Toronto Administrative Offices and Related Facilities

Location Name	Address	Floor Area (Ft^2)
2 Civic Centre Court	2 Civic Centre Crt.	46,145
51 Lisgar*	51 Lisgar St.	10,053
Archives and Records Centre	255 Spadina Rd.	39,590
Atlantic Ave Storage Building	98 Atlantic Ave.	43,002
Chaplin Crescent Storage	329 Chaplin Cres.	18,299
City Clerk's Office	88 Sunrise Ave.	34,843
City Hall	100 Queen St. W	780,061
Consolidated Communication Centre	703 Don Mills Rd.	132,999
Dee Avenue Lab	30 Dee Ave.	14,994
Dyas Road	18 Dyas Rd.	73,927
Dyas Road Archive Building	14 Dyas Rd.	28,589
East Court & Municipal Services	1530 Markham Rd.	120,104
East York Civic Centre	850 Coxwell Ave.	67,544
Eastern District Office	1 Eastville Ave.	19,849
Election Services Building	89 Northline Rd.	55,004
Etobicoke Civic Centre	399 The West Mall	154,925
Forestry W District Office	1 Bathurst St.	8,999
Former Hydro Building	1652 Keele St.	22,497
Health Office	662 Jane St.	2,540
Metro Hall	55 John St.	787,186
North District Office	275 Merton St.	66,747
North York Civic Centre	5100 Yonge St.	303,518
Old City Hall	60 Queen St. W	350,494
Pape Avenue Multiuse Building	126 Pape Ave.	9,365
Property Department Workshop	786 Dundas St. E	39,170
Property Maintenance Office	149 River St.	13,487
Public Health Building	175 Memorial Park Ave.	6,394
Public Health HQ	277 Victoria St.	111,385
Queen Street Office	1631 Queen St. E	25,327
Rexdale Community Hub	21 Panorama Crt.	96,369
Scarborough Civic Centre	150 Borough Dr.	372,868
St Lawrence Hall	157 King St. E	55,413
TAVIS - OSSG	2126 Kipling Ave.	16,952
Toronto Island Service Office	1 Lake Shore Ave.	20,968

Location Name	Address	Floor Area (Ft^2)
Toronto Water Centre	60 Tiffield Rd.	64,831
Water Revenue Office	77 Elizabeth St.	14,768
Wellesley Jarvis Office	111 Wellesley St. E	52,108
York Civic Center	2700 Eglinton Ave. W	72,915
York Humber Office**	605 Rogers Rd.	32,980

*Location added to building portfolio in 2016
**Location added to building portfolio in 2017

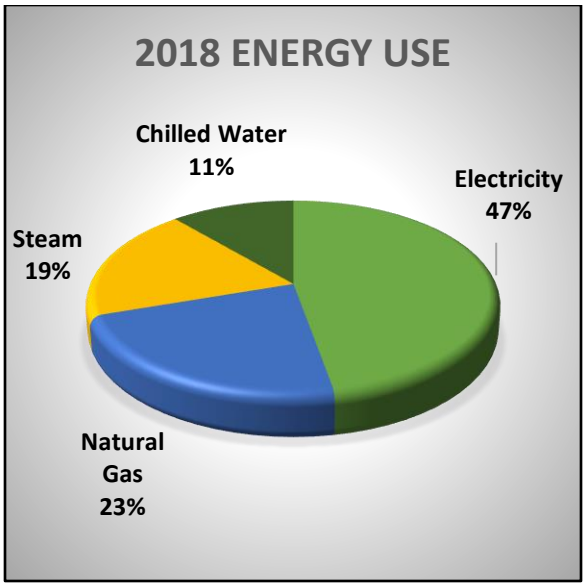
These offices are occupied by a variety of divisions and agencies within the City of Toronto and hours of operation vary accordingly. Some locations also contain food services, call centres, and data centres.

3.1.2 Summary of 2018 Energy Use and Costs

Of the 39 administrative buildings described in this report, steam and chilled water are utilized at Metro Hall, City Hall, and Old City Hall for building heating and cooling, respectively. Other sites utilize either electricity or natural gas for space heating. Total electricity, natural gas, steam, chilled water, and water use and costs are summarized below.

Table 10: 2018 Energy Use and Costs – Administrative Offices and Related Facilities

	Use	Rate	ekWh	Cost
Electricity	66,515,949 kWh	0.153/kWh	66,515,949	$10,149,085
Natural Gas	3,086,218 m^3	0.258/m^3	31,916,740	$796,482
Steam	75,763 mlb	37.888/mlb	26,623,791	$2,870,486
Chilled Water	4,535,491 TonHr	0.191/TonHr	15,946,786	$867,904
Water	206,669 m^3	3.798/m^3		$784,859
Total			141,003,266	$15,468,816



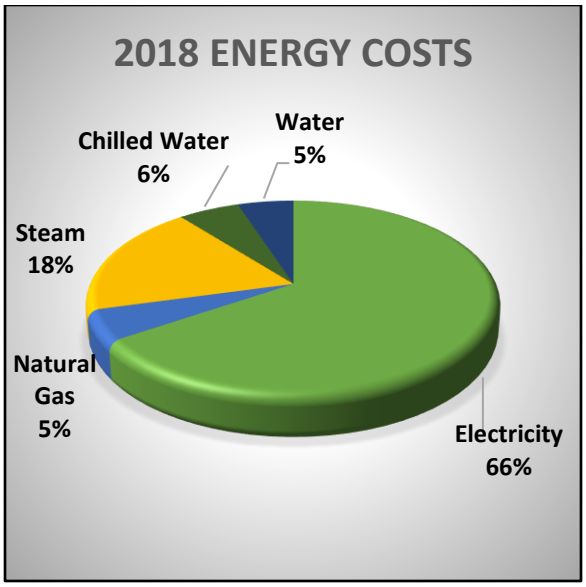


Figure 5: 2018 Energy Use and Costs – Administrative Buildings and Related Facilities

Note that electricity accounts for 47% of total energy use, but 66% of total costs. Conversely, natural gas accounts for 23% of total energy use, but only contributes 5% to the total energy costs for these administrative buildings.

Collectively, Metro Hall, City Hall, Old City Hall, North York Civic Centre, and the Consolidated Communication Centre account for 62% of the overall energy costs of the reported administrative buildings.

3.2 Previous Conservation Measures and Results

3.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented 21 projects in administrative buildings for a total estimated annual savings of $917,945.

Table 11: Energy Efficiency Measures (2014-2018) – Administrative Offices and Related Facilities

Project Summary			Project Cost			Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Total Incentives Redeemed	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	8	8	$5,012,077	$336,144	$4,675,933	4,154,385	N/A		$610,695
Mechanical	9	7	$12,048,080*	$126,567	$11,921,513	N/A	1,133,763	N/A	$307,250
Structural	3	3	$2,540,882	N/A	$2,540,882	Unavailable			
Structural/Mechanical	1	1	$727,525*	N/A	$727,525	Unavailable			

*Total project cost includes charges for non-energy efficiency measures

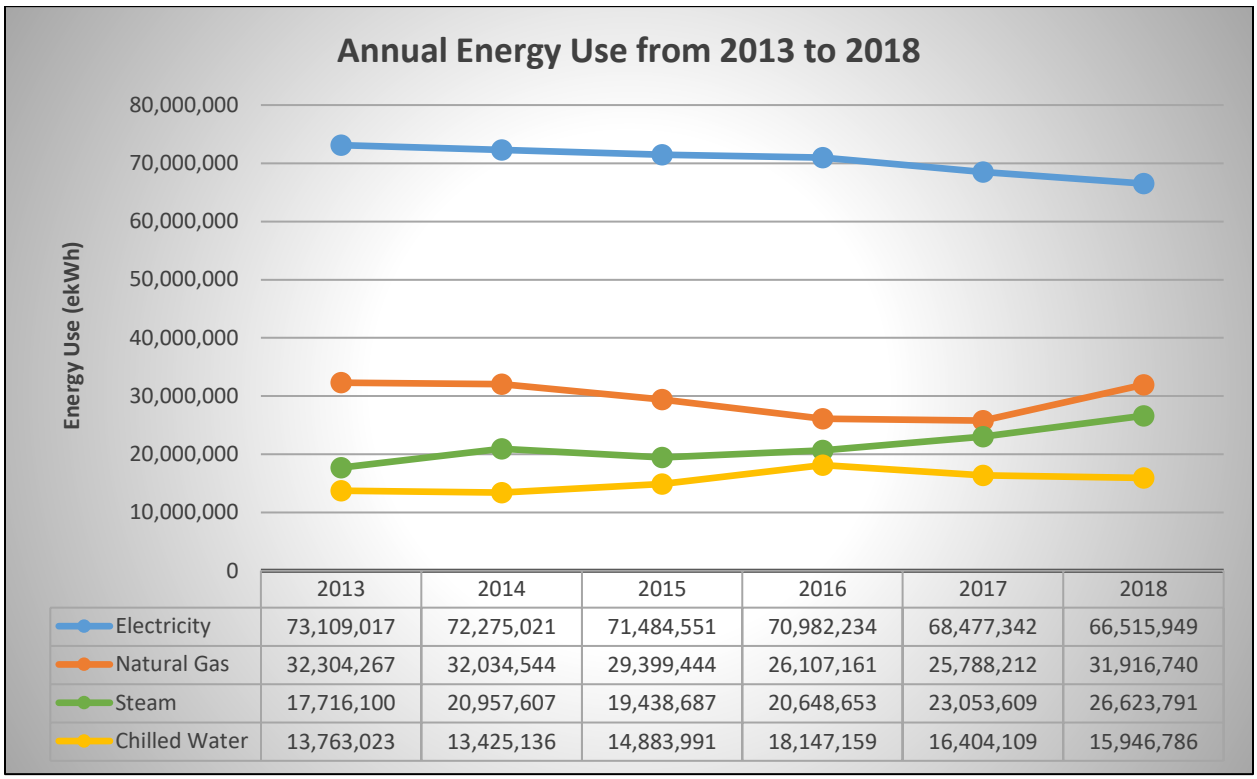
For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency measures consistently targeted the largest consumers of energy in the administrative building portfolio, including:

- Metro Hall
    - Building-wide LED lighting retrofit
    - Upgrade of mechanical equipment including tube heat exchangers used in steam system
- Scarborough Civic Centre
    - Building-wide LED lighting retrofit
    - Building Automation System upgrade
    - Roof membrane replacement
- North York Civic Centre
    - Building-wide LED lighting retrofit
    - Building Automation System upgrade
    - Replacement of rooftop air-handling units

Five additional buildings underwent LED lighting retrofits for a total annual electricity reduction of 4,154,385 kWh.

3.2.2 Summary of 2013-2018 Actual Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	73,109,017	72,275,021	71,484,551	70,982,234	68,477,342	66,515,949
Natural Gas	32,304,267	32,034,544	29,399,444	26,107,161	25,788,212	31,916,740
Steam	17,716,100	20,957,607	19,438,687	20,648,653	23,053,609	26,623,791
Chilled Water	13,763,023	13,425,136	14,883,991	18,147,159	16,404,109	15,946,786

Figure 6: Actual Energy Use (2013-2018) – Administrative Offices and Related Facilities

From 2013 to 2018, the following changes were observed in energy use at City of Toronto administrative buildings:

- **Electricity:** 8% decrease
- **Natural Gas:** 1% decrease
- **Steam:** 50% increase
- **Chilled water:** 16% increase

Note that steam use increased at Metro Hall, City Hall, and Old City Hall, while chilled water use only increased at City Hall and Old City Hall. Of the 37 buildings present in the City's portfolio since 2013, 20 demonstrated a reduction in overall energy consumption with an average decrease of 15%.

As a result of increased steam and chilled water consumption between 2013 and 2018, greenhouse gas emissions increased by 2,271 tons. This increase was somewhat mitigated by a decrease in electricity and natural gas use.

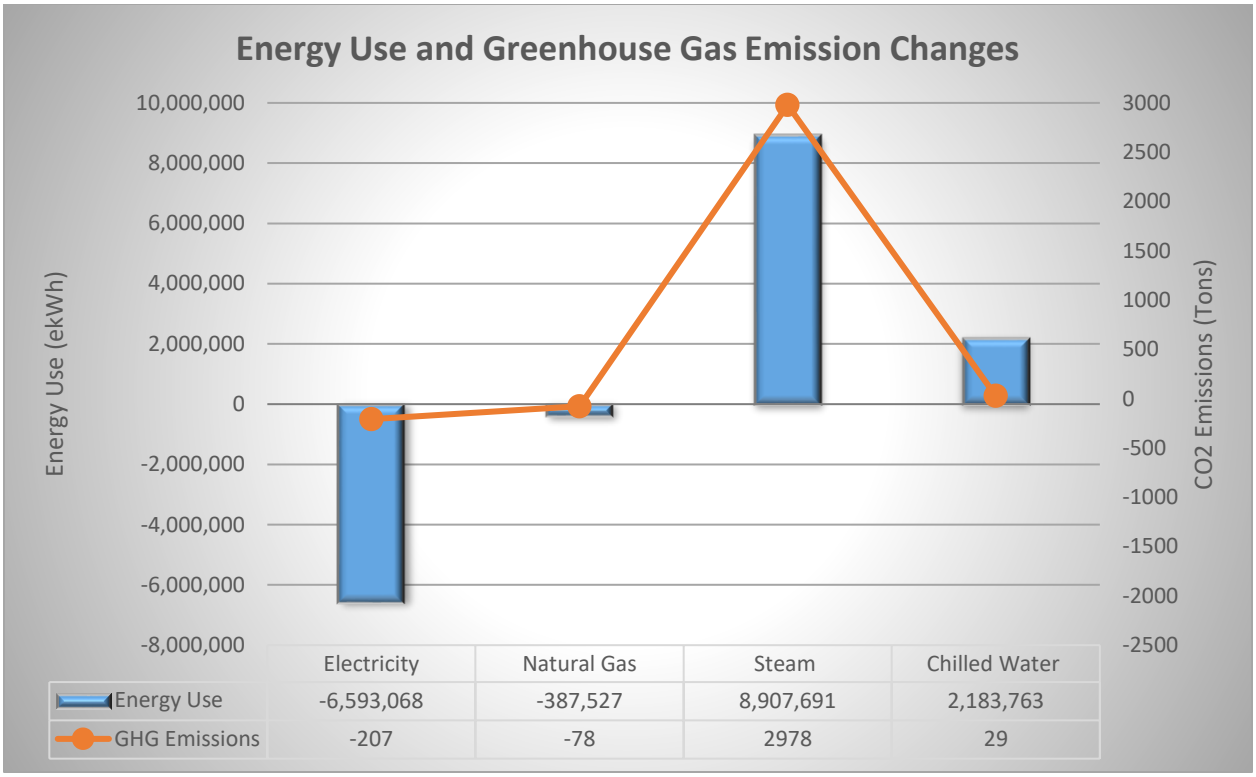


Figure 7: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Administrative Offices and Related Facilities

3.2.3 Case Study: North York Civic Centre

Figure 8: North York Civic Centre

North York Civic Centre is located at 5100 Yonge Street and contains office space for Parks, Forestry, & Recreation, City Clerk's, Fire Services, Toronto Water, Public Health, and Municipal Licensing & Standards. The civic centre also contains a wedding chapel and committee rooms that can be rented by non-profit and charitable groups.

Table 12: Energy Efficiency Measures (2014-2018) – North York Civic Centre

Project Summary				Project Cost			Estimated Annual Utility Savings			
Project Type	**Project Description**	**Start Date**	**Completion Date**	**Total Cost**	**Total Incentives Redeemed**	**Net Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Electrical	Building-wide LED lighting retrofit	2017	2018	$667,530	$42,192	$625,338	854,114	N/A		$125,555
Mechanical	Replace rooftop air handling units F-2	2015	2016	$1,355,839*	N/A	$1,355,839	Unavailable			
Mechanical	BAS replacement	2014	2015	$885,887.00	N/A	$885,887.00	Unavailable			

* Total project cost includes charges for non-energy efficiency measures

As a result of these measures, electricity and natural gas use decreased by 24% and 26%, respectively, between 2013 and 2018. This is equivalent to 3,697,489 ekWh and $183,571 in savings.

3.3 Proposed Energy Conservation Measures and Initiatives

Between 2019 and 2024, the City of Toronto currently has 59 projects planned in administrative buildings and related facilities.

Table 13: Energy Efficiency Measures (2019-2024) – Administrative Offices and Related Facilities

Project Summary			Project Cost			Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Estimated Incentives	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	4	4	$697,718	$16,345	$681,373	199,120	N/A	N/A	$29,271
Mechanical	36	17	$18,362,837	N/A	$18,362,837	Unavailable			
Structural	19	11	$21,678,644	N/A	$21,678,644	Unavailable			

For a detailed description of individual measures, see Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 39 administrative buildings, energy-efficiency measures are planned in 22 locations and multiple measures, or "deep retrofits", are planned in the following 13 buildings:

- Archives and Records Centre
- City Hall
- Consolidated Communication Centre
- East York Civic Centre
- Former Hydro Building
- Metro Hall
- North York Civic Centre
- Pape Avenue Multiuse Building
- Property Department Workshop
- Public Health HQ
- Scarborough Civic Centre
- St. Lawrence Hall
- York Civic Centre

By implementing multiple energy efficiency measures in these locations, this plan has the potential to have a significant impact on both the portfolio's largest consumers of energy and those with the greatest public profile. Deep energy retrofits balance the higher savings value of electricity-based retrofits with the lower savings value of natural gas, which allows for a greater

reduction in greenhouse gas emissions. If successful, this work could provide a template to guide energy retrofits in both publicly and privately owned buildings.

4. Ambulance Stations and Related Facilities

4.1 Energy Use and Building Characteristics

4.1.1 Building Characteristics

The City of Toronto is reporting on 30 ambulance stations and related facilities with a total area of 313,613 ft^2. The majority of these locations are ambulance stations, but also included are the Ambulance Headquarters and associated office space. Note that the Ambulance Headquarters and Station #10 are shared with Fire Services.

Table 14: City of Toronto Ambulance Stations and Related Facilities

Location Name	Address	Floor Area (ft^2)
Ambulance Headquarters	4330 Dufferin St.	143,494
EMS Workshop West	866 Richmond St. W	1,658
Multi-Function Station #1*	1300 Wilson Ave.	29,503
NE District Office / Station #20	2430 Lawrence Ave. E	7,782
NW District Office & Garage	50 Toryork Dr.	13,153
Station #10	2015 Lawrence Ave. W	5,005
Station #11	1135 Caledonia Rd.	3,574
Station #12	1535 Albion Rd.	1,938
Station #13	555 Martin Grove Rd.	2,756
Station #14	321 Rexdale Blvd.	4,252
Station #18	643 Eglinton Ave. W	1,345
Station #21	887 Pharmacy Ave.	2,799
Station #22	3100 Eglinton Ave. E	2,583
Station #24	3061 Birchmount Rd.	2,659
Station #28	2900 Lawrence Ave. E	1,905
Station #30 & Garage & Office	100 Turnberry Ave.	16,380
Station #31	4219 Dundas St. W	2,831
Station #32	9 Clendenan Ave.	3,218
Station #33	760 Dovercourt Rd.	3,132
Station #34	674 Markham St.	13,939
Station #37	1288 Queen St. W	4,413
Station #38	259 Horner Ave.	5,102
Station #39	155 The East Mall	1,927
Station #40	58 Richmond St. E	12,798
Station #41**	1300 Pape Ave.	1,841
Station #42	1535 Kingston Rd.	6,997
Station #45	135 Davenport Rd.	11,496
Station #46	105 Cedarvale Ave.	1,572
Station #47	3600 St. Clair Ave. E	1,787
Station #54	4135 Bathurst St.	1,324

*Location added to building portfolio in 2017

**Location added to building portfolio in 2014

These locations are run by Toronto Paramedic Services, which is the largest municipal paramedic service in Canada. TPS staff members are trained to provide emergency and non-emergency care and transportation to appropriate medical facilities for injuries and illnesses.

Stations vary in size from the equivalent of a one-storey house, which houses a garage and modest living space, to the multi-function station at 1300 Wilson Avenue, which occupies over 29,000 square feet and can accommodate 25 ambulances. The majority of these sites operate 24 hours a day, seven days a week.

4.1.2 Summary of 2018 Energy Use and Costs

Of the 30 sites described in this report, all currently consume both electricity and natural gas, the latter of which is utilized for space heating and/or domestic hot water heating. Total electricity, natural gas, and water use and costs are summarized below.

Table 15: Energy Use and Costs – Ambulance Stations and Related Facilities

	Use	Rate	ekWh	Cost
Electricity	6,017,587 kWh	$0.154/kWh	6,017,587	$925,024
Natural Gas	686,598 m^3	0.306/m^3	7,100,591	$210,351
Water	20,414 m^3	$3.780/$m^3$		$77,171
Total			13,118,178	$1,212,546

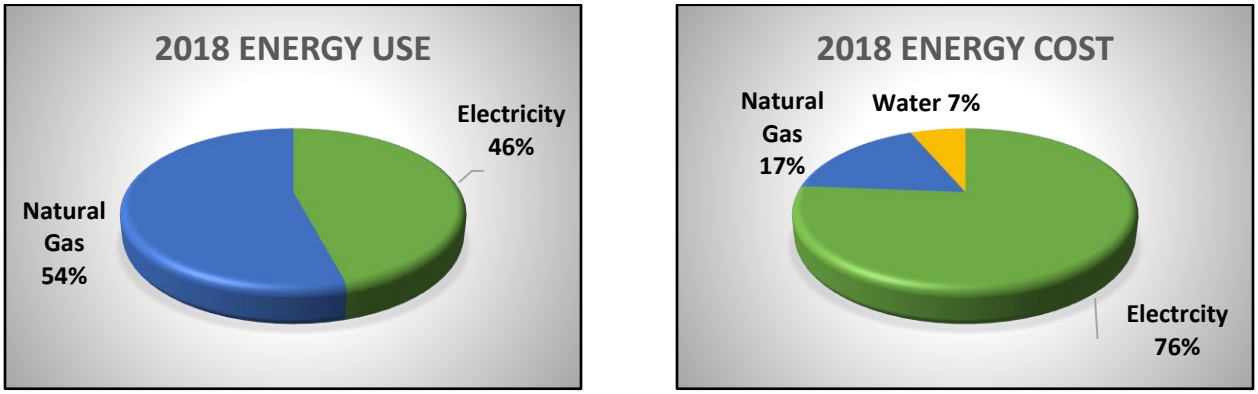


Figure 9: 2018 Energy Use and Costs – Ambulance Stations and Related Facilities

Note that electricity accounts for 46% of overall energy use, but disproportionately contributes to 76% of overall costs.

Ambulance headquarters accounts for 49% of total energy use and 54% of total costs for this group of buildings, which is equivalent to 6,427,907 ekWh and $654,775.

4.2 Previous Energy Conservation Measures and Results

4.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented nine energy efficiency projects in ambulance stations and related facilities.

Table 16: Energy Efficiency Measures (2014-2018) – Ambulance Stations and Related Facilities

Project Summary			Project Cost			Estimated Annual Utility Savings			
Project Type	**Number of Projects**	**Number of Buildings**	**Total Cost**	**Total Incentives Redeemed**	**Net Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Structural	4	4	$810,620*	N/A	$810,620*	Unavailable			
Mechanical	4	2	$1,511,231	$12,141	$1,499,090	Unavailable			
Electrical	1	1	$235,964	$27,320	$208,644	185,196	N/A		$27,224

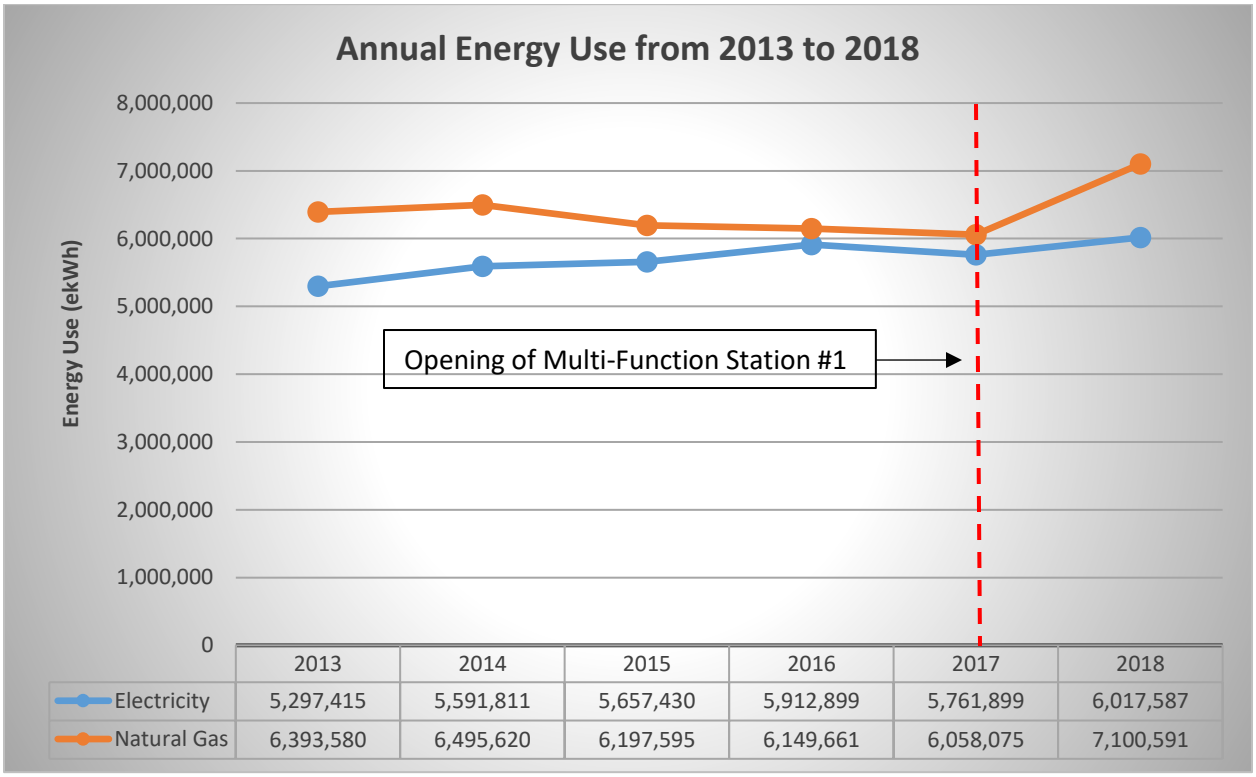
*Total project cost includes charges for non-energy efficiency measures

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Of the nine projects implemented between 2014 and 2018, four targeted Ambulance Headquarters, which accounts for 49% of total energy use for this building group. These measures include the following:

- Replace supply fan S-8 for north wing
- Upgrade HVAC system for 3rd floor
- Building-wide LED lighting retrofit
- North building pneumatic upgrades

4.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	5,297,415	5,591,811	5,657,430	5,912,899	5,761,899	6,017,587
Natural Gas	6,393,580	6,495,620	6,197,595	6,149,661	6,058,075	7,100,591

Figure 10: Actual Energy Use (2013-2018) – Ambulance Stations and Related Facilities

From 2013 to 2018, the following changes were observed in energy use at City of Toronto ambulance stations and related facilities:

- **Electricity:** 14% increase
- **Natural Gas:** 11% increase
- **Water:** 10% decrease

Note that Multi-Function Station #1 opened in 2017 and accounted for 7% of the portfolio's total energy use in 2018, which contributed to the overall increase in electricity consumption. Of the 28 stations open since 2013, 14 have reduced overall energy consumption by an average of 25%.

As a result of increased natural gas and electricity consumption between 2013 and 2018, greenhouse gas emissions increased by 78 tons.

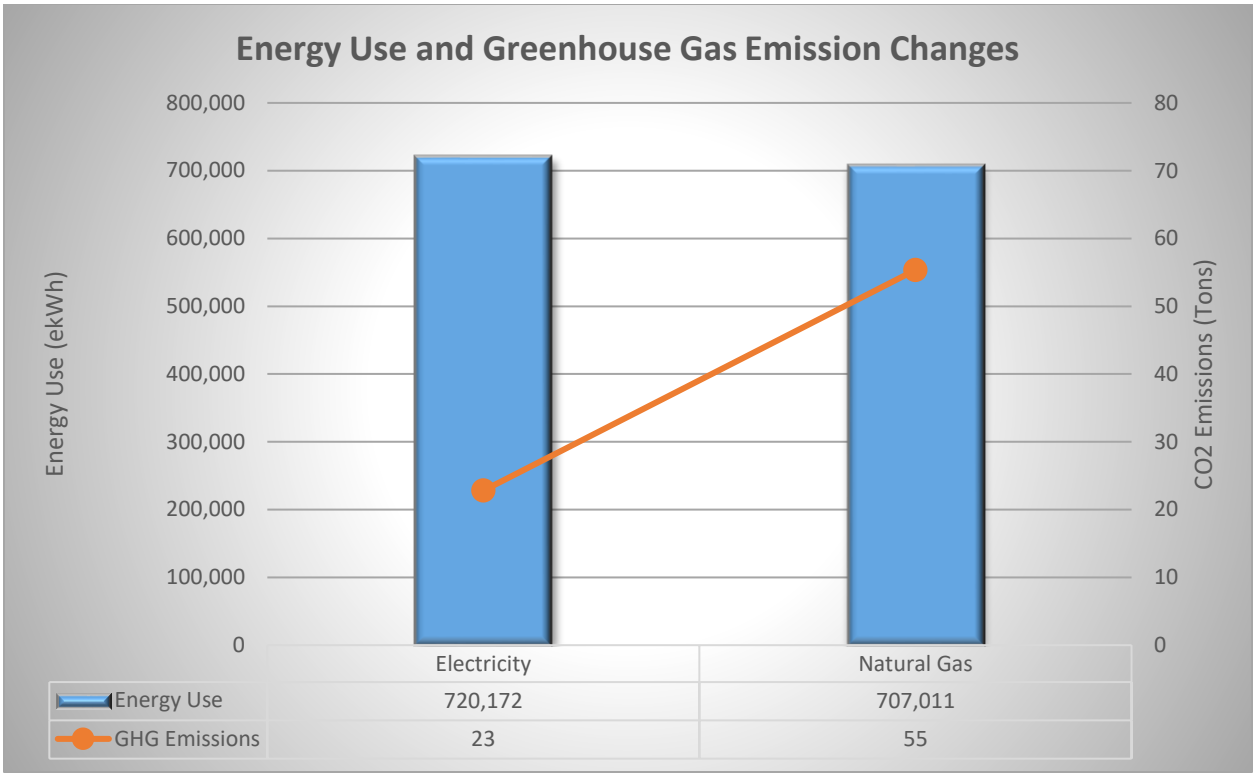


Figure 11: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Ambulance Stations and Related Facilities

4.3 Proposed Energy Conservation Measures and Initiatives

Between 2019 and 2024, the City of Toronto currently has 39 energy efficiency projects planned in ambulance stations and associated facilities.

Table 17: Energy Efficiency Measures (2019-2024) – Ambulance Stations and Related Facilities

Project Summary			Project Cost			Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Estimated Incentives	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	22	21	$2,255,427	$24,262	$36,156	Unavailable			$36,156
Mechanical	5	3	$1,598,894	N/A	$1,598,894	Unavailable			
Structural	12	6	$1,817,902	N/A	$1,817,902	Unavailable			

For a detailed description of individual measures, see Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 30 ambulance stations and associated facilities, energy-efficiency measures are planned in 24 locations and building-wide LED lighting retrofits are to be implemented in 21 locations. Multiple measures, or "deep retrofits", are planned in the following six buildings:

- Ambulance Headquarters

- Station #12
- Station #24
- Station #28
- Station #42
- Station #46

Additionally, a solar PV and battery storage system will be installed at Station #46 in 2019. This system will be used to offset the building's overall electricity use and potentially act a back-up power generator. Further details on this and other renewable energy systems in the City of Toronto can be found in Section: 2. Renewable Energy.

5. Animal Centres

5.1 Energy Use and Building Characteristics

5.1.1 Building Characteristics

The City of Toronto is reporting on three animal centres with a total area of 32,637 square feet.

Table 18: City of Toronto Animal Centres

Location Name	Address	Floor Area (ft^2)
East Animal Centre	821 Progress Ave.	12,831
North Animal Centre	1300 Sheppard Ave. W	13,218
West Animal Centre	146 The East Mall	6,588

These locations are operated by Municipal Licensing & Standards and are integral to delivering the following services:

- Providing dog and cat licensing services
- Taking in stray and surrendered animals or those in need of protective care
- Providing quality care for homeless animals that are sick or injured
- Reuniting more than 2,000 lost animals with their guardians each year through the City's lost and found pets program
- Providing vaccinations and microchip implants to the more than 4,000 animals who are adopted out each year by the City of Toronto
- Spay and neuter cats, dogs, and rabbits to reduce pet overpopulation

Adoptions occur at all three shelters, which are open to the public seven days a week between 10:30am-6:30pm. The West and East Animal Centre locations also operate crematoriums for disposal of wildlife cadavers.

Further information about the animal services offered by the City of Toronto can be found at: Animals & Pets - City of Toronto

5.1.2 Summary of 2018 Energy Use and Costs

Of the three sites described in this report, all currently consume both electricity and natural gas, the latter of which can be utilized for space heating, domestic hot water heating, and crematorium operation. Total electricity, natural gas, and water use and costs are summarized below.

Table 19: 2018 Energy Use and Costs – Animal Centres

	Use	Rate	ekWh	Cost
Electricity	1,043,877 kWh	$0.171/kWh	1,043,877	$178,417
Natural Gas	138,588 m^3	$0.302/$m^3$	1,433,236	$41,905
Water	3,484 m^3	$3.780/$m^3$		$13,167
Total			2,477,113	$233,489

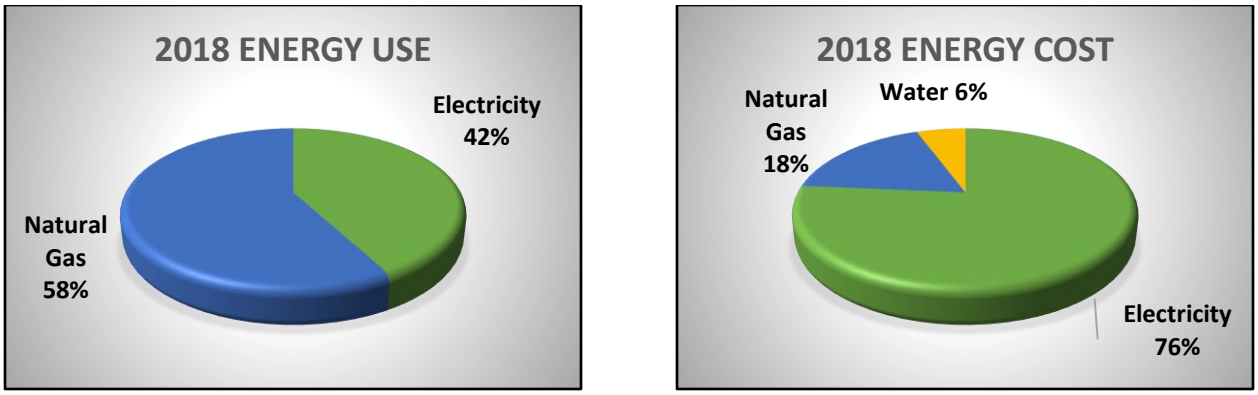


Figure 12: 2018 Energy Use and Costs – Animal Centres

Note that electricity accounts for 42% of total energy use, but 76% of total costs. Conversely, natural gas accounts for 58% of total energy use, but only contributes to 18% of total energy costs for these animal centres.

5.2 Previous Conservation Measures and Results

5.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented three energy efficiency projects in animal centres.

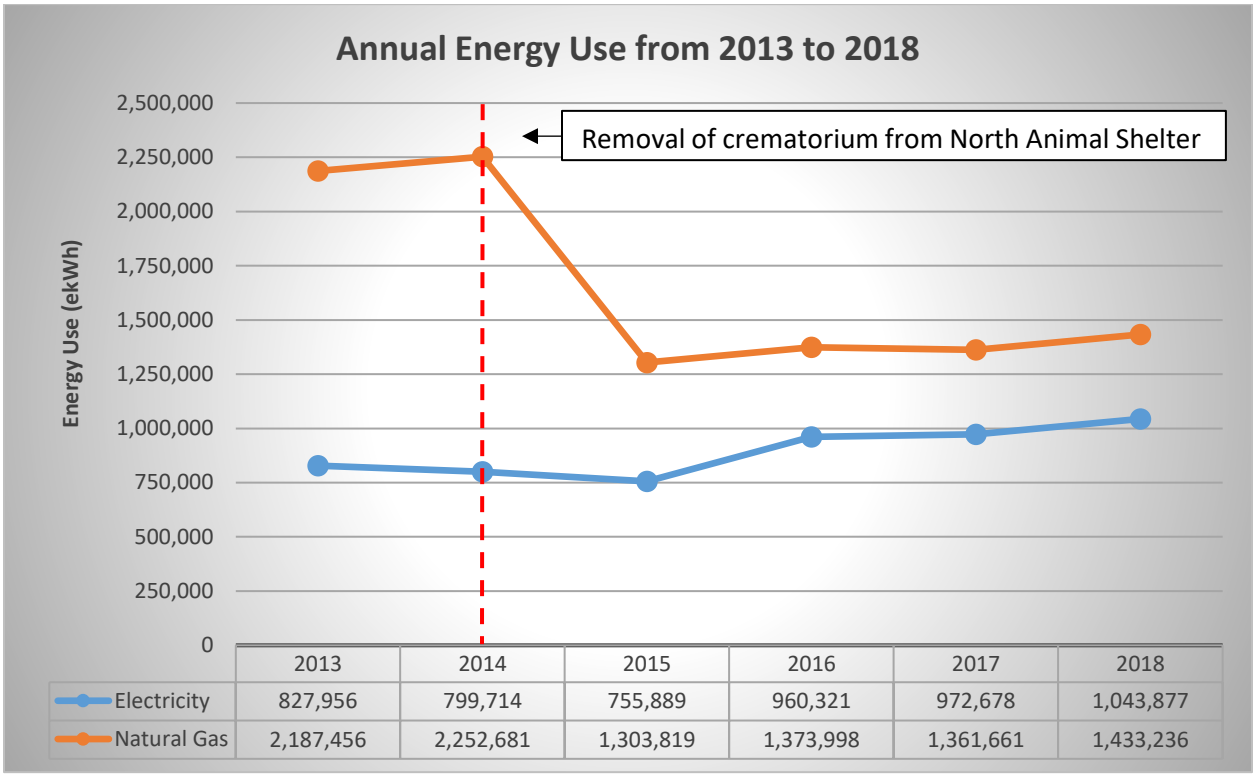
Table 20: Energy Efficiency Measures (2014-2018) – Animal Centres

Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Structural	1	1	$288,098	Unavailable			
Mechanical	2	2		Unavailable			

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency measures include significant HVAC upgrades to both the North and East Animal Centres, which were designed to impact both natural gas and electricity consumption.

5.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	827,956	799,714	755,889	960,321	972,678	1,043,877
Natural Gas	2,187,456	2,252,681	1,303,819	1,373,998	1,361,661	1,433,236

Figure 13: Actual Energy Use (2013-2018) – Animal Centres

From 2013 to 2018, the following changes were observed in energy use at City of Toronto animal centres:

- **Electricity:** 26% increase
- **Natural Gas:** 34% decrease
- **Water:** 11% decrease

Note that a crematorium was removed the North Animal Centre in 2014, which resulted in an 87% decrease in natural gas use at that facility and contributed to the overall decrease of 34%.

As a result of the significant decrease in natural gas consumption observed between 2013 and 2018, greenhouse gas emissions decreased by 133 tons.

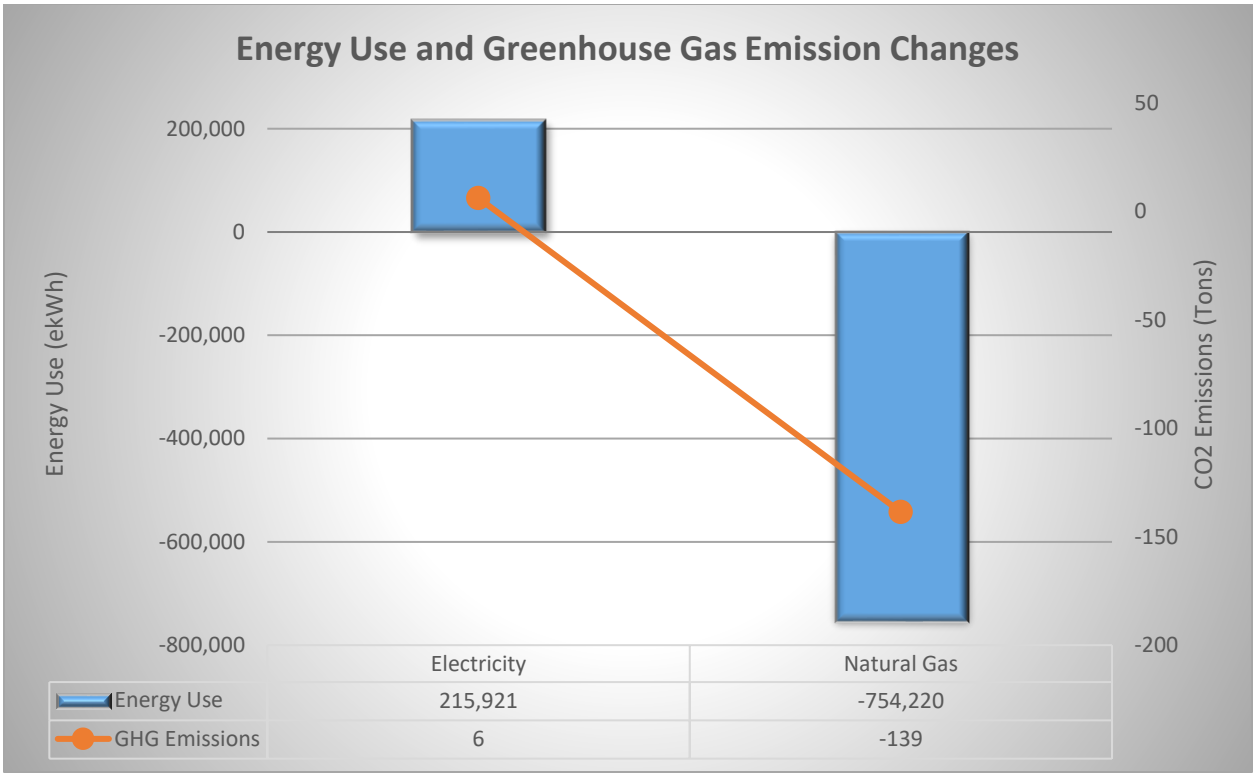


Figure 14: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Animal Centres

5.3 Proposed Energy Conservation Measures and Initiatives

Between 2019 and 2024, the City of Toronto has plans to implement four energy efficiency projects in animal centres.

Table 21: Energy Efficiency Measures (2019-2024) – Animal Centres

Project Summary			Project Cost	Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Mechanical	1	1	$24,135	Unavailable			
Structural	3	2	$432,519	Unavailable			

Further project details can be seen in Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Significant structural energy efficiency measures are planned in both the West and East Animal Centres, which will have a substantial impact on natural gas and electricity use at both sites.

6. Child Care Facilities

6.1 Energy Use and Building Characteristics

6.1.1 Building Characteristics

The City of Toronto is reporting on 13 child care facilities with a total area of 96,593 ft^2.

Table 22: City of Toronto Child Care Facilities

Location Name	Address	Floor Area (ft^2)
Albion Road Child Care Centre	1545 Albion Rd.	5,543
Ancaster Child Care Centre	45 Ancaster Rd.	7,018
City Kids Child Care Centre	34 Bathurst St.	8,460
Danforth Child Care Centre	1125 Danforth Ave.	6,351
Davisville Child Care Centre	41 Millwood Rd.	3,595
Jesse Ketchum Child Care Centre	7 Berryman St.	11,550
Kingston Rd Daycare*	3392 Kingston Rd.	5,500
Malvern Child Care Centre	1321 Neilson Rd.	6,501
Mount Dennis Child Care Centre*	1296 Weston Rd.	7,350
Regent Park Child Care Centre**	40 Regent St.	15,963
Thomas Berry Child Care Centre	3495 Lakeshore Blvd. W	9,117
Willowridge Child Care Centre	30 Earldown Dr.	4,844
Woodbine Child Care Centre	700 Milverton Blvd.	4,801

*Location added to building portfolio in 2016
**Location added to building portfolio in 2014

These locations are run by Children's Services, which operates over 50 early learning and child care programs throughout Toronto for children up to 12 years old. The 13 buildings described in this report represent those that are owned and managed directly by the City and, consequently, those locations over which the City has direct control in relation to energy management.

Information about Children's Services locations not described in this report can be found here: Toronto Early Learning & Child Care Services

6.1.2 Summary of 2018 Energy Use and Costs

Of the 13 child care facilities described in this report, electricity and natural gas are utilized at every location except Davisville Child Care Centre, Mount Dennis Child Care Centre, and Regent Park Child Care Centre. Natural gas is utilized for space heating and/or domestic water heating at all other locations. Total electricity and natural gas use and costs for this building portfolio are summarized below.

Table 23: 2018 Energy Use and Costs – Child Care Centres

	Use	Rate	ekWh	Cost
Electricity	1,256,792 kWh	$0.151/kWh	1,256,792	$189,774
Natural Gas	134,494 m^3	0.336/m^3	1,390,897	$45,190
Water	8,442 m^3	$3.794/$m^3$		$32,029
Total			2,647,689	$266,993

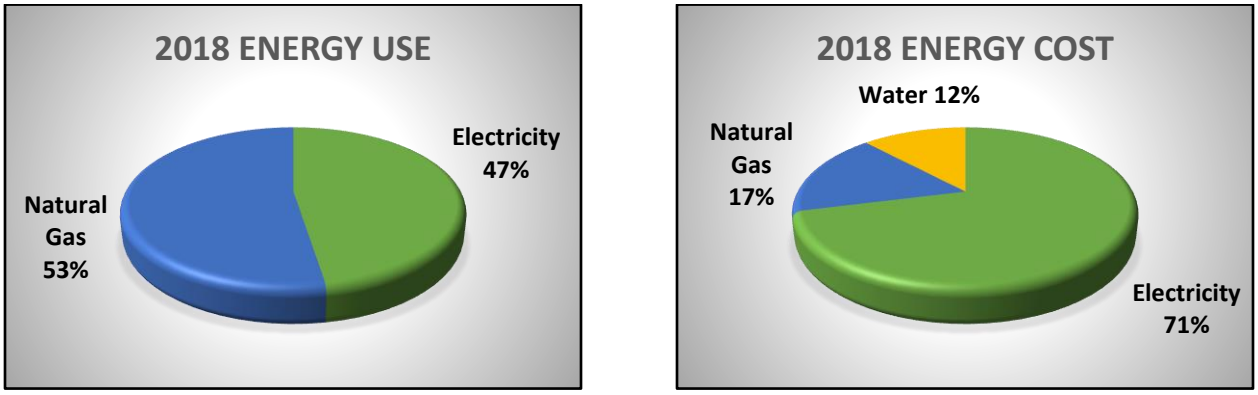
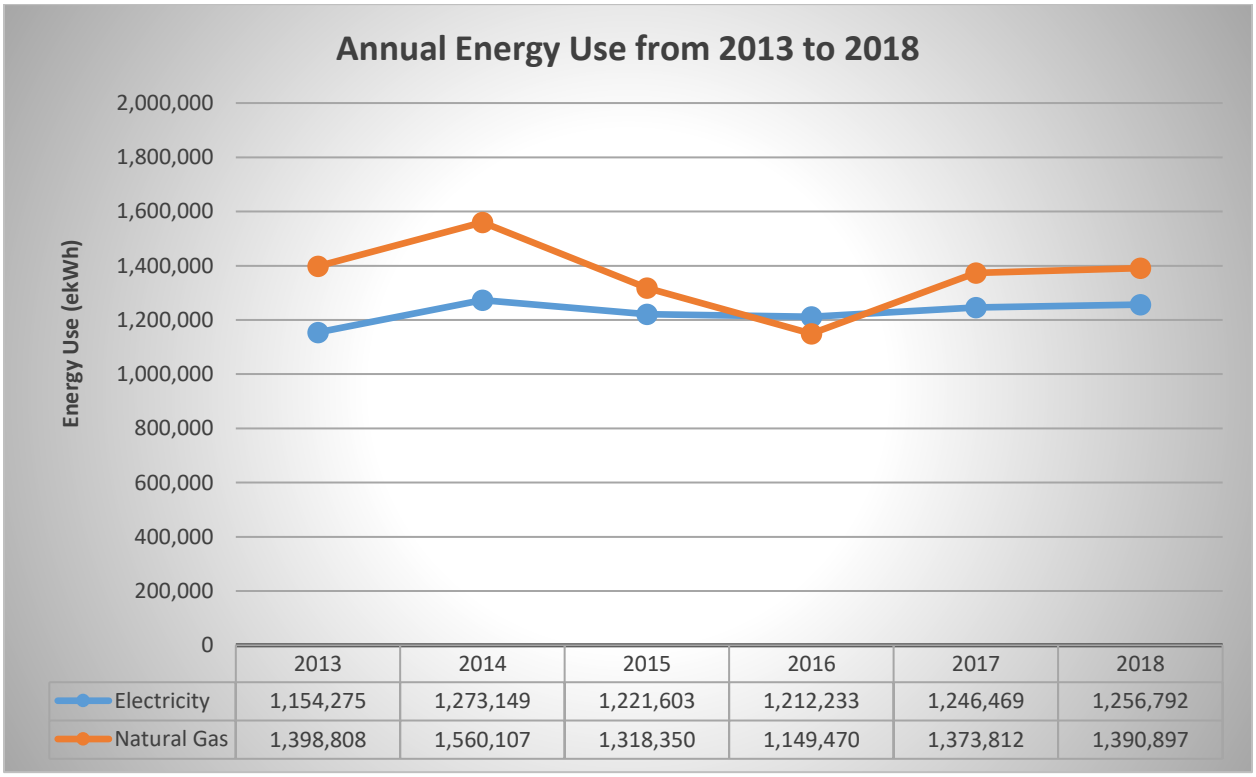


Figure 15: 2018 Energy Use and Costs – Animal Centres

Note that electricity contributes to 47% of total energy use, but accounts for 71% of the total costs. Conversely, natural gas accounts for 53% of total energy use, but only contributes to 17% of the total energy costs.

6.2 Previous Conservation Measures and Results

6.2.1 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	1,154,275	1,273,149	1,221,603	1,212,233	1,246,469	1,256,792
Natural Gas	1,398,808	1,560,107	1,318,350	1,149,470	1,373,812	1,390,897

Figure 16: Actual Energy Use (2013-2018) – Child Care Centres

From 2013 to 2018, the following changes were observed in energy use at City of Toronto child care facilities:

- **Electricity:** 9% increase
- **Natural gas:** 1% decrease
- **Water:** 41% decrease

Of the ten locations present in the City's portfolio since 2013, eight demonstrated a reduction in overall energy consumption with an average decrease of 23%.

As a result of decreased natural gas consumption and increased electricity consumption between 2013 and 2018, greenhouse gas emissions at these sites were reduced by 72 tons.

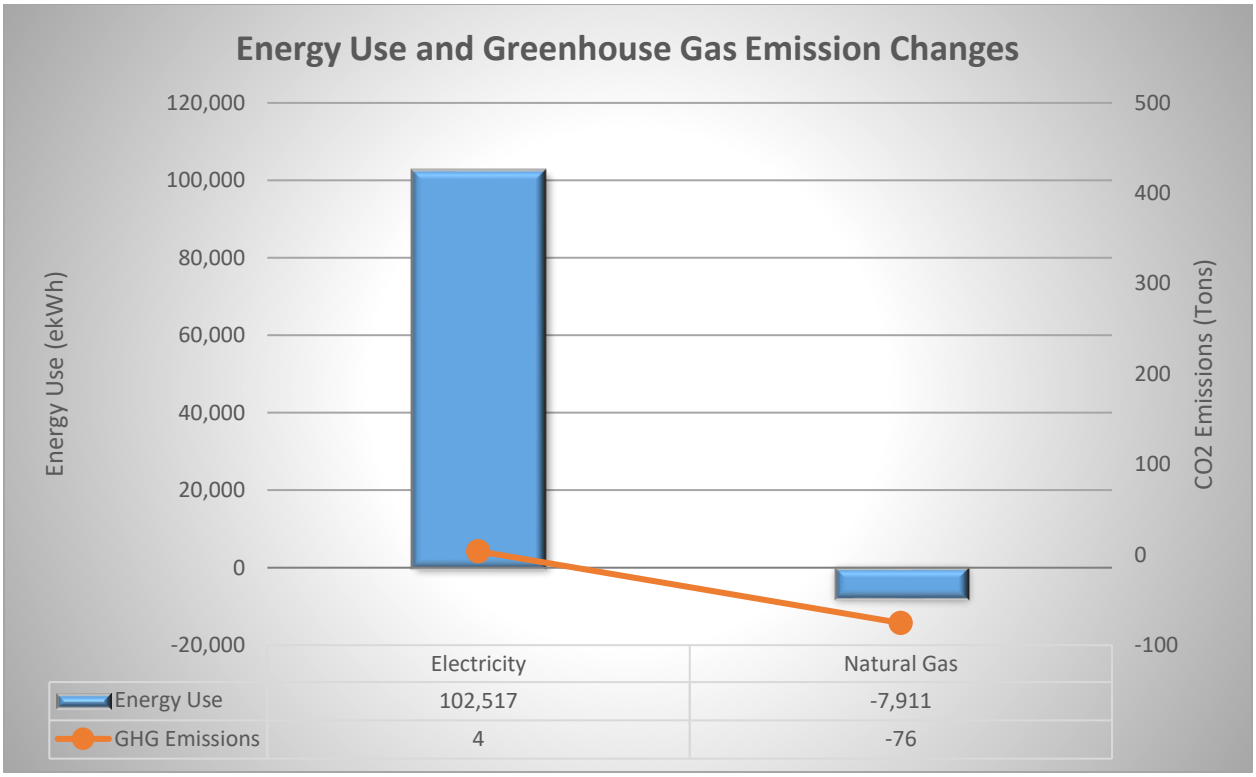


Figure 17: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Child Care Centres

6.3 Proposed Energy Conservation Measures and Initiatives

Between 2019 and 2024, the City of Toronto has plans to close the current Mount Dennis Child Care Centre and replace it with a net-zero building, which will include a solar PV system, geo-exchange, and solar thermal water technology. Further details about this and other renewable energy initiatives can be seen in Section: 2. Renewable Energy.

7. Community Centres

7.1 Energy Use and Building Characteristics

7.1.1 Building Characteristics

The City of Toronto is reporting on 75 community centres with a total area of 1,361,288 ft^2.

Table 24: City of Toronto Community Centres

Location Name	Address	Floor Area (ft^2)
Amesbury Community Centre	1507 Lawrence Ave. W	37,975
Ancaster Community Centre	41-47 Ancaster Rd.	7,513
Armour Heights Community Centre	2140 Avenue Rd.	19,773
Banbury Community Centre	120 Banbury Rd.	9,537
Bennington Heights Clubhouse	457 Heath Ave.	1,432
Berner Trail Community Centre	120 Berner Trail	10,204
Birkdale Community Centre	1299 Ellesmere Rd.	11,733
Bocci Club*	6 Thora Ave.	4,004
Burrows Hall Community Complex	1081 Progress Ave.	43,185
Carmine Stefano Community Centre	3100 Weston Rd.	57,867
Cedar Brook Community Centre	91 East Park Blvd.	14,951
Curran Hall Community Centre	277 Orton Park Rd.	2,508
Davenport Community Centre	1347 Davenport Rd.	2,282
David Appleton Community Centre	33A Pritchard Ave.	2,906
Davisville Park/Tennis	218 Davisville Ave.	2,777
Driftwood Community Centre	4401 Jane St.	25,015
Earl Bales Community & Senior Centre	4169 Bathurst St.	21,657
East Scar Boys/Girls Club	100 Galloway Rd.	13,972
East York Clubhouse	323-525 Cosburn Ave.	1,001
Eastview Neighbourhood Community Centre	86 Blake St.	25,510
Edithvale Community Centre	7 Edithvale Dr.	24,725
Ellesmere Community Centre	20 Canadian Rd.	24,402
Elmbank Community Centre	10 Rampart Rd.	14,725
Fairbank Memorial Rec Centre	2213 Dufferin St.	19,364
Fairfield Senior Centre	80 Lothian Ave.	14,316
Falstaff Community Centre	50 Falstaff Ave.	13,853
Flemingdon Community Centre	150 Grenoble Dr.	10,000
Forest Hill Community Centre	666 Eglinton Ave. W	32,841
Franklin Horner	432 Horner Ave.	39,500
Harwood Hall Community Centre	85 Cayuga Ave.	4,306
Horner Avenue Senior Centre	320 Horner Ave.	4,252
Islington Senior Centre	4968 Dundas St. W	9,967
Jenner Jean-Marie Community Centre	48 Thorncliffe Park Dr.	13,207
L'Amoreaux Community Centre	2000 McNicoll Ave.	25,995

Location Name	Address	Floor Area (ft^2)
Lakeshore Community Centre	2445 Lakeshore Blvd. W	5,952
Lamp Senior Centre	185 Fifth St.	26,318
Lawrence Heights Community Centre	9 Replin Rd.	22,152
Malvern R.C	30 Sewells Rd.	106,466
Maple Leaf Cottage	62 Laing St.	2,842
Markdale Rec & Daycare	41 Markdale Ave.	1,829
Masaryk-Cowan C.R.C	220 Cowan Ave.	32,270
Milliken Park Rec Centre	4325 McCowan Rd.	17,631
Mount Dennis Community Centre	4 Hollis St.	3,003
New Toronto Seniors Club	105 Fourth St.	3,025
Niagara Community Centre	700 Wellington St. W	5,296
North York Memorial Hall	5120 Yonge St.	10,473
Northwood Community Centre	15 Clubhouse Crt.	36,167
O'Connor Community Centre	1386 Victoria Park Ave.	16,254
Oakdale Community Centre	350 Grandravine Dr.	10,000
Oakridge Community Centre	63 Pharmacy Ave.	18,600
Ourland Community Centre	18 Ourland Ave.	9,451
Pelmo Park Tennis	185 Pelmo Cres.	2,573
Port Union Community Centre	5450 Lawrence Ave. E	19,978
Power House Community Centre.	65 Colonel Samuel Smith Park Dr.	5,737
Regent Park Community Centre**	402 Shuter St.	55,004
Regent Park North Rec Centre	295 Sackville St.	6,168
S.H Armstrong Rec Centre	56 Woodfield Rd.	18,277
Scott Westney House	180 McLevin Ave.	3,046
Seneca Village Community Centre	1700 Finch Ave. E	9,408
Sir Adam Beck Community Centre	525 Horner Ave.	7,341
St. James Town Community Centre	495 Sherbourne St.	41,904
Stan Wadlow Clubhouse	373 Cedarvale Ave.	10,323
Stanley Community Centre	25 Stanley Rd.	12,895
Sunshine Centre for Seniors	60 Lakeshore Ave.	2,250
Tall Pines Community Centre	64 Rylander Blvd.	5,188
Thistletown Community Centre	925 Albion Rd.	44,810
Trace Manes Clubhouse	110 Rumsey Rd.	6,329
W Acres Senior Centre	65 Hinton Rd.	4,994
Warden Hilltop Community Centre.	25 Mendelssohn St.	25,995
Waterfront Neighbourhood Centre	627 Queens Quay W	123,214
West Rouge Community Centre	270 Rouge Hills Dr.	24,402
West Scarborough N.C	313 Pharmacy Ave.	25,198
Western District Office	61 Edgehill Rd.	4,844
Western Services Yard	235 Edenbridge Dr.	4,133

Location Name	Address	Floor Area (ft^2)
Willowdale Lawn Bowling	150 Beecroft Rd.	2,293

*Location not operational in 2015
**Location added to building portfolio in 2015

Community centres, as defined by this report, will not contain an indoor pool or skating rink, but may contain one or all of the following public-use spaces: gymnasiums, kitchen, multi-purpose rooms, computer rooms, lounges, craft rooms, dance studios, and fitness/weight rooms.

These locations are managed by Parks, Forestry, & Recreation, Facilities Management, or an independent Board of Management and offer a variety of programs and services to the public including, but not limited to: arts and crafts, camps, sports programs, fitness and health programs, and cooking classes.

Further information about recreation programs offered by the City of Toronto can be found here: City of Toronto - Recreation

7.1.2 Summary of 2018 Energy Use and Costs

Total electricity, natural gas, and water use and costs are summarized below.

Table 25: 2018 Energy Use and Costs – Community Centres

	Use	Rate	ekWh	Cost
Electricity	19,309,653 kWh	$0.164/kWh	19,309,653	$3,163,416
Natural Gas	2,339,596 m^3	0.280/m^3	24,195,395	$655,607
Water	115,069 m^3	$3.906/$m^3$		$449,431
Total			43,505,048	$4,268,454

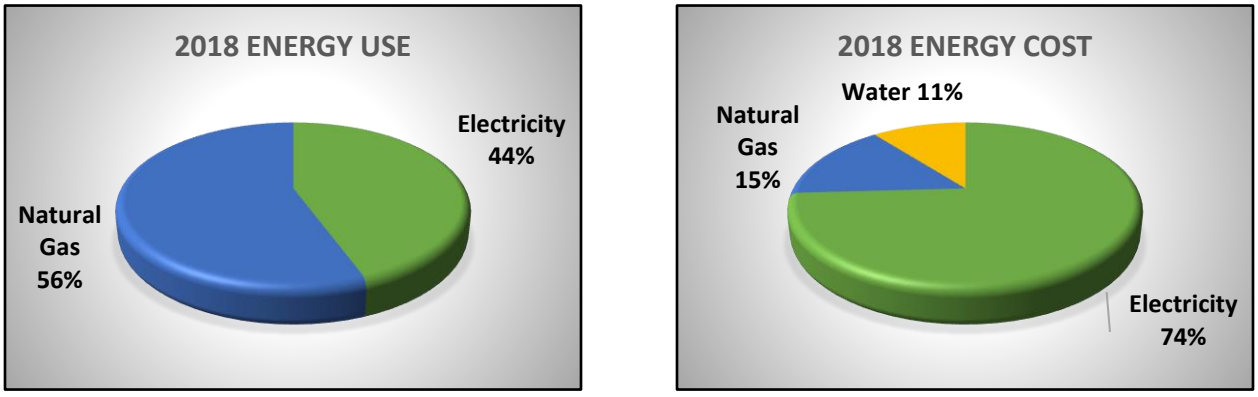


Figure 18: 2018 Energy Use and Costs – Community Centres

Note that electricity accounts for 44% of total energy, but 74% of total costs for this group of buildings. Conversely, natural gas consumption accounts for the majority of use with 56%, but only contributes to 15% of total costs.

11 locations in this building portfolio use over 1,000,000 ekWh annually and collectively account for 48% of the total energy use for this group. These buildings are as follows:

- Malvern Rec Centre
- St. James Town Community Centre
- Waterfront Neighbourhood Centre
- Thistletown Community Centre
- Burrows Hall Community Complex
- Forest Hill Community Centre
- West Scarborough N.C
- Carmine Stefano Community Centre
- Edithvale Community Centre
- Earl Bales Community & Senior Centre
- Franklin Horner

7.2 Previous Conservation Measures and Results

7.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented four energy efficiency projects in community centres.

Table 26: Energy Efficiency Measures (2014-2018) – Community Centres

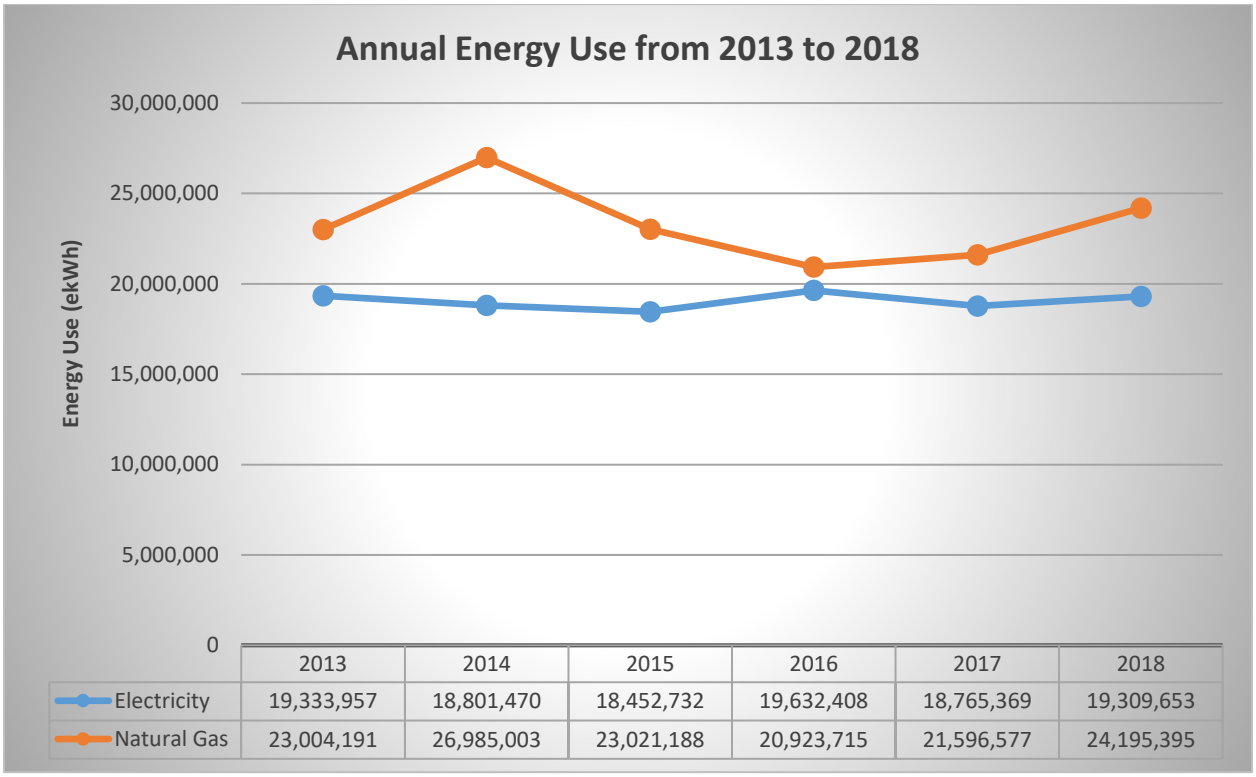
Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Structural	3	3	$2,397,750*	Unavailable			
Mechanical	1	1	$442,000	Unavailable			

*Total project cost includes charges for non-energy efficiency measures

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency measures include significant building envelope work at Northwood Community Centre, Regent Park North Rec Centre, and Thistledown Community Centre, which should have a measureable effect on heating and cooling costs for these locations.

7.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	19,333,957	18,801,470	18,452,732	19,632,408	18,765,369	19,309,653
Natural Gas	23,004,191	26,985,003	23,021,188	20,923,715	21,596,577	24,195,395

Figure 19: Actual Energy Use (2013-2018) – Community Centres

From 2013 to 2018, the following changes were observed in energy use at City of Toronto community centres:

- **Electricity:** Less than 1% decrease
- **Natural gas:** 5% increase
- **Water:** 33% decrease

Note that overall energy increases of over 95% were observed at the New Toronto Seniors Club, Stan Wadlow Clubhouse, and the St. James Town Community Centre, which indicates that these locations were not fully operational in 2013 or that they have since expanded their services.

Of the 74 locations present in 2013, 41 have had overall energy reductions with an average decrease of 18%.

As a result of increased natural gas consumption and decreased electricity consumption, greenhouse gas emissions increased by 201 tons between 2013 and 2018 at these locations.

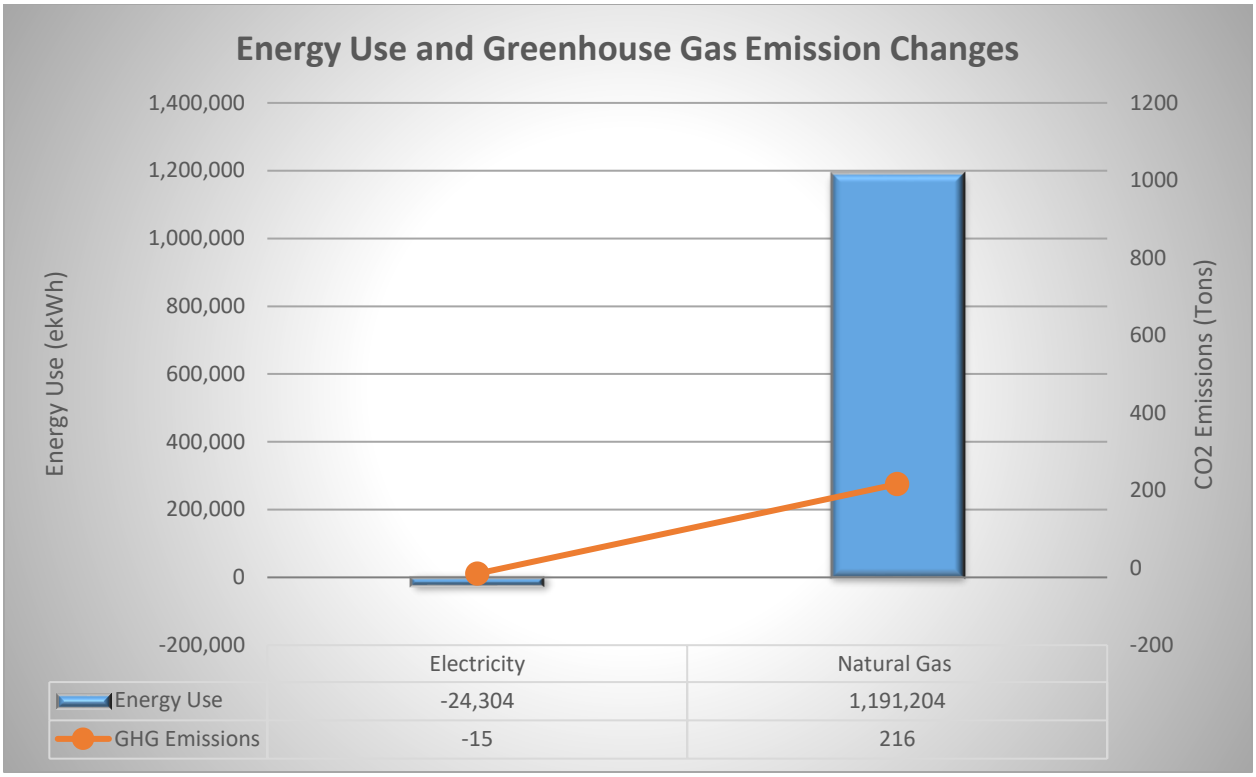


Figure 20: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Community Centres

7.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City of Toronto currently has 17 energy efficiency projects planned in community centres.

Table 27: Energy Efficiency Measures (2019-2024) – Community Centres

Project Summary			Project Cost			Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Estimated Incentives	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	2	2	$384,157	$8,512	$375,645	204,222	N/A	N/A	$30,021
Mechanical	6	3	$1,949,111	N/A	$1,949,111	Unavailable			
Structural	9	6	$1,705,664	N/A	$1,705,664	Unavailable			

For a detailed description of individual measures, see Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 75 community centres, energy-efficiency measures are planned in nine locations and multiple measures, or "deep retrofits" are planned in the following four buildings:

- Eastview Neighbourhood Community Centre
- Islington Seniors Centre
- Lamp Senior Centre

- West Scarborough N.C.

These projects will involve significant mechanical and building envelope work, which will be designed to lower natural gas and electricity consumption and costs at these sites.

The Waterfront Neighbourhood Centred is scheduled for a building-wide LED lighting retrofit along with geothermal heating and solar PV and battery system. Further details about this project and other renewable energy initiatives can be found in Section: 2. Renewable Energy.

8. Cultural Facilities

8.1 Energy Use and Building Characteristics

8.1.1 Building Characteristics

The City of Toronto is reporting on 21 cultural facilities with a total indoor area of 357,746 ft^2. Note that some of these sites have extensive outdoor space, which is not included in the floor areas listed or the energy analysis presented.

Table 28: City of Toronto Cultural Facilities

Location Name	Address	Floor Area (ft^2)
Campbell House	3620 Kingston Rd.	3,595
Cedar Ridge Creative Centre	225 Confederation Dr.	13,110
Toronto Botanical Gardens	755 Lawrence Ave. E.	36,953
Colborne Lodge	1 Colborne Lodge Dr.	7,050
Edenbridge Centre	235A Edenbridge Dr.	5,013
Edwards Gardens	755 Lawrence Ave. E	10,021
Gibson House Museum	5172 Yonge St.	8,364
Historic Fort York	100 Garrison Rd.	22,819
Lakeshore Assembly Hall	1 Colonel Samuel Smith Park Dr.	14,596
Mackenzie House Museum	82 Bond St.	2,573
Montgomery's Inn	4709 Dundas St. W	7,642
Neilson Park Creative Arts	56 Neilson Dr.	12,346
Palaise Royale	1601 Lake Shore Blvd. W	28,503
Riverdale Farm	201 Winchester St.	23,713
Spadina House Museum	285 Spadina Rd.	27,588
St Lawrence Market South	91 Front St. E	99,114
Temp - St Lawrence Market North*	125 The Esplanade	11,711
Todmorden Mills	67 Pottery Rd.	17,707
William Goodwin House	355 Lesmill Rd.	1,744
Zion Methodist Church	1650 Finch Ave. E	2,002
Zion School House	1091 Finch Ave. E	1,582

*Location added to building portfolio in 2015

These sites are managed by multiple divisions within the City of Toronto including Facilities Management, Parks, Forestry, & Recreation, and Economic Development & Culture. While all of these locations seek to promote the cultural diversity of Toronto and its inhabitants, there is significant variability between sites in terms of building profile. For instance, the Gibson House museum is a heritage site that was originally built in 1851 and now offers an illuminating glimpse into 19th century living. Programs and services offered at this site include school trips, exhibits, board game nights, and community quilting groups. At the other end of the spectrum is Riverdale Farm, which presents guests with a living representation of farm life in rural Ontario and houses waterfowl, turkeys, and pigs. All sites within this group are open to the public and

collectively they represent an opportunity to learn about Toronto's unique culture and history. Further information about these locations and programs offered therein can be found here: City of Toronto - History, Art, & Culture

8.1.2 Summary of 2018 Energy Use and Costs

Of the 21 cultural facilities described in this report, electricity and natural gas are utilized at every location except the Edenbridge Centre and Palaise Royale. Natural gas is utilized for space heating and/or domestic water heating, while the two sites described likely employ electric heating. Total electricity, natural gas, and water use and costs are summarized below.

Table 29: 2018 Energy Use and Costs – Cultural Facilities

	Use	Rate	ekWh	Cost
Electricity	8,298,985 kWh	$0.166/kWh	8,298,985	$1,373,759
Natural Gas	577,487 m^3	0.294/m^3	5,968,640	$169,513
Water	55,487 m^3	$3.791/$m^3$		$210,363
Total			14,267,625	$1,753,635

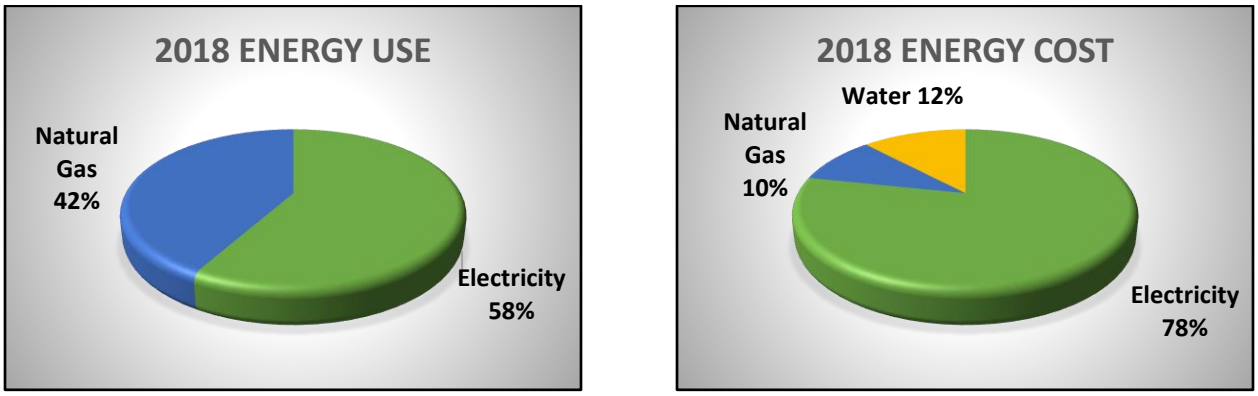


Figure 21: 2018 Energy Use and Costs – Cultural Facilities

Note that electricity accounts for 58% of total energy use, but 78% of overall costs for this group of buildings.

The St. Lawrence Market South consumes almost 7,000,000 ekWh of energy annually and accounts for 49% of the total energy use for cultural facilities.

8.2 Previous Conservation Measures and Results

8.2.1 Previous Energy Efficiency Measures (2014-2018)

Note that unique restrictions are placed upon energy efficiency opportunities in these facilities due to heritage site designations and resultant considerations.

Between 2014 and 2018, the City of Toronto implemented six energy efficiency projects in cultural facilities.

Table 30: Energy Efficiency Measures (2014-2018) – Cultural Facilities

Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	3	3	$157,000	5%-10%	N/A	N/A	Unavailable
Mechanical	3	3	$684,353	10%-15%	10%-15%	N/A	Unavailable

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Significant mechanical work including furnace and building automation system replacements were performed at Historic Fort York and St. Lawrence Market South, which are the two largest consumers of energy within this building group.

8.2.2 Summary of 2013-2018 Energy Use

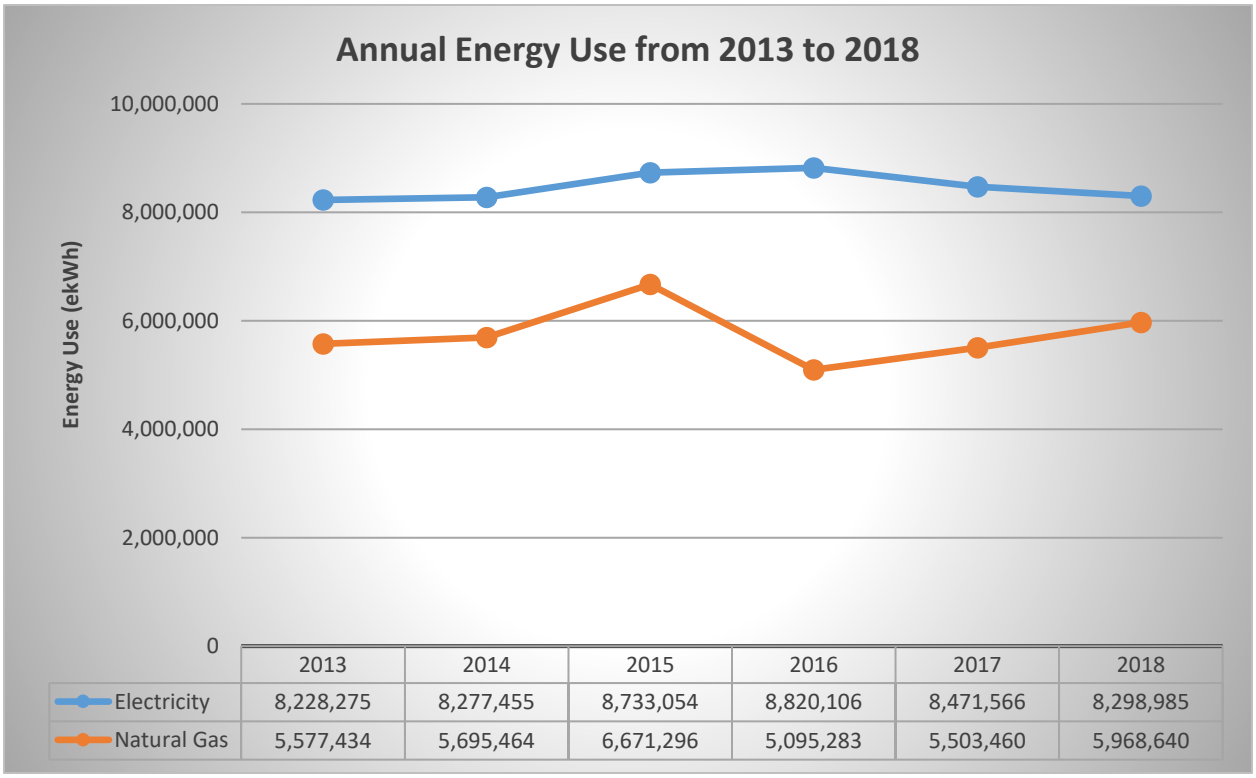


Figure 22: Actual Energy Use (2013-2018) – Cultural Facilities

From 2013 to 2018, the following changes were observed in energy use at City of Toronto cultural facilities:

- **Electricity:** 1% increase
- **Natural gas:** 7% increase
- **Water:** 13% decrease

Of the 20 locations present in 2013, nine had energy reductions with an average decrease of 15%. Historic Fort York experienced an overall energy increase of 330% from 2013 to 2018, which indicates a significant expansion of services and programs offered during that time period.

As a result of increased natural gas and electricity consumption between 2013 and 2018, greenhouse gas emissions increased by 80 tons.

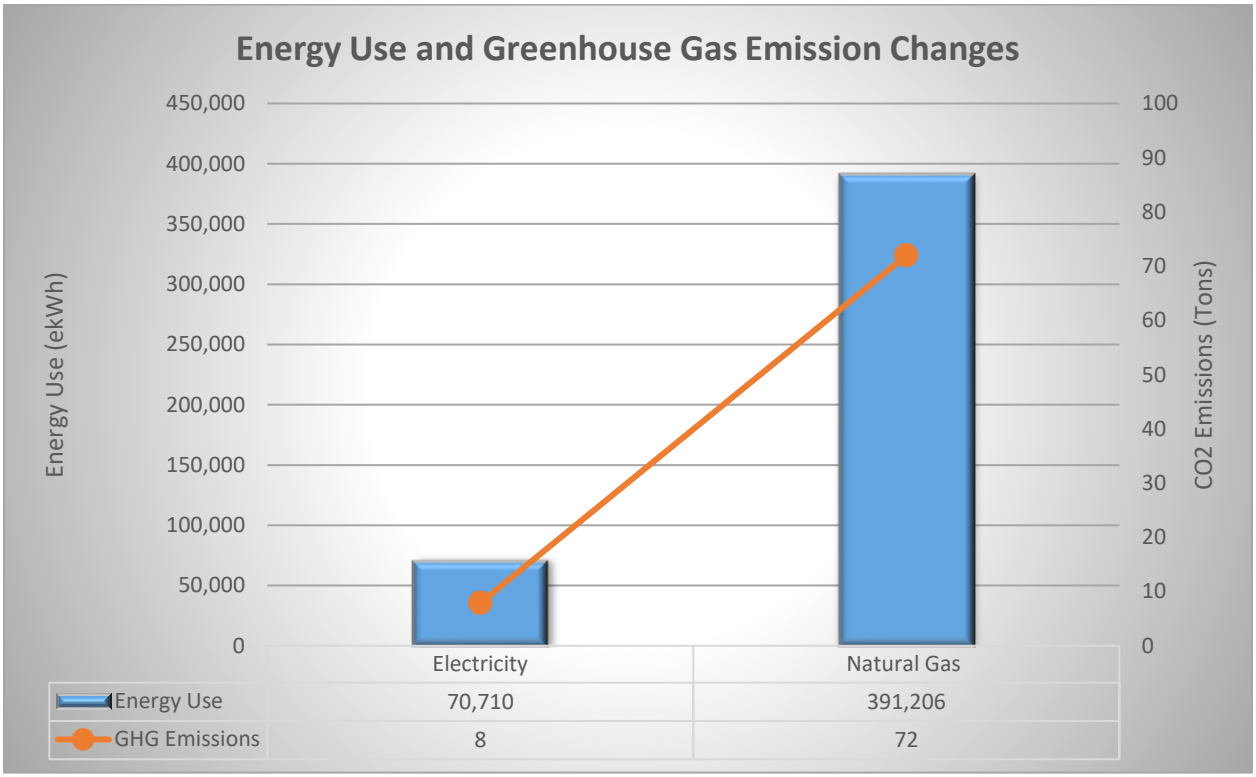


Figure 23: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Cultural Facilities

8.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Economic Development & Culture seeks continuous improvement in its operations, including in energy conservation, at all of its managed sites. Lighting upgrades will continue across all museums and arts centres in a systematic fashion as budgets permit. Upgrades to HVAC equipment to medium and high efficiency models will similarly continue as existing equipment and systems reach the end of their serviceable life. Furthermore, future capital projects will be aligned with the City's green standards for eco-friendly and energy efficient buildings.

Specifically, the City of Toronto currently has 18 energy efficiency projects planned for implementation in cultural facilities.

Table 31: Energy Efficiency Measures (2019-2024) – Cultural Facilities

Project Summary			Project Cost	Projected Annual Utility Savings			
Project Type	**Number of Projects**	**Number of Buildings**	**Total Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Electrical	8	6	$920,849	3%-20%	N/A	N/A	Unavailable
Mechanical	6	4	$650,335	5%-15%	5%-15%	N/A	Unavailable
Structural	4	2	$7,088,109	Unavailable			

Further details on specific measures can be seen in Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 21 cultural facilities, energy-efficiency measures are planned in nine locations. Significant structural, electrical, and mechanical work is planned for St. Lawrence Market South, including:

- Heritage lighting installation
- Replacement of electrical distribution equipment, including tenant
- Replace exhaust fans, including in the common area washrooms
- Replacement of exterior doors, windows, and roof

Collectively, the energy efficiency measures for this group will result in reductions of approximately 20% and 15% in electricity and natural gas consumption, respectively.

9. Fire Stations and Related Facilities

9.1 Energy Use and Building Characteristics

9.1.1 Building Characteristics

The City of Toronto is reporting on 90 fire stations and related facilities for a total indoor area of 882,791 ft^2. The majority of these locations are fire stations, but also included are training centres, a museum, and associated administrative space. Note that Fire Stations 111, 112, 114, 142, 211, 212, 243, 334, 335, and 442 are shared with Toronto Paramedic Services.

Table 32: City of Toronto Fire Stations and Related Facilities

Location Name	Address	Floor Area (ft^2)
Fire Academy	895 Eastern Ave.	61,214
Fire Museum And Storage	351 Birchmount Rd.	3,272
Fire Services - East Command Offices	3 Dohme Ave.	25,898
Fire Station 111	3300 Bayview Ave.	5,662
Fire Station 112	5700 Bathurst St.	7,018
Fire Station 113	700 Seneca Hill Dr.	4,833
Fire Station 114	12 Canterbury Pl.	8,633
Fire Station 115	115 Parkway Forest Dr.	5,985
Fire Station 116	2755A Old Leslie St.	11,776
Fire Station 121	10 William Carson Cres.	4,219
Fire Station 122	2545 Bayview Ave.	3,046
Fire Station 123	145 Bond Ave.	2,497
Fire Station 125	1109 Leslie St.	5,813
Fire Station 131	3135 Yonge St.	5,845
Fire Station 132	476 Lawrence Ave. W	7,664
Fire Station 133	1505 Lawrence Ave. W	8,062
Fire Station 134	16 Montgomery Ave.	7,126
Fire Station 135*	325 Chaplin Cres.	12,718
Fire Station 135 (Old)	641 Eglinton Ave. W	10,592
Fire Station 141	4100 Keele St.	12,500
Fire Station 142	2753 Jane St.	5,586
Fire Station 143	1009 Sheppard Ave. W	2,895
Fire Station 145	20 Beffort Rd.	11,001
Fire Station 146	2220 Jane St.	7,535
Fire Station 211	900 Tapscott Rd.	5,005
Fire Station 212	8500 Sheppard Ave. E	16,501
Fire Station 213	7 Lapsley Rd.	5,048
Fire Station 214	745 Meadowvale Rd.	4,887
Fire Station 215	5318 Lawrence Ave. E	5,737
Fire Station 221	2575 Eglinton Ave. E	11,916
Fire Station 222	755 Warden Ave.	6,910

Location Name	Address	Floor Area (ft^2)
Fire Station 223	116 Dorset Rd.	7,459
Fire Station 224	1313 Woodbine Ave.	3,767
Fire Station 225	3600 Danforth Ave.	9,085
Fire Station 226	85 Main St.	11,808
Fire Station 227	1904 Queen St. E	10,484
Fire Station 231	740 Markham Rd.	14,241
Fire Station 232	1550 Midland Ave.	5,350
Fire Station 233	59 Curlew Dr.	11,001
Fire Station 234	40 Coronation Dr.	5,350
Fire Station 235	200 Bermondsey Rd.	8,902
Fire Station 241	3325 Warden Ave.	5,500
Fire Station 242	2733 Brimley Rd.	5,500
Fire Station 243	4560 Sheppard Ave. E	5,350
Fire Station 244	2340 Birchmount Rd.	5,350
Fire Station 245	1600 Birchmount Rd.	5,608
Fire Station 311	20 Balmoral Ave.	12,755
Fire Station 312	34 Yorkville Ave.	9,806
Fire Station 313	441 Bloor St. E	12,099
Fire Station 314	12 Grosvenor St.	11,937
Fire Station 315	132 Bellevue Ave.	7,244
Fire Station 321	231 McCrae Ave.	7,535
Fire Station 322	256 Cosburn Ave.	7,535
Fire Station 323	153 Chatham Ave.	10,236
Fire Station 324	840 Gerrard St. E	13,153
Fire Station 325	475 Dundas St. E	10,129
Fire Station 331	31 Claremont St.	10,979
Fire Station 332	260 Adelaide St. W	24,865
Fire Station 333	201 Front St. E	12,723
Fire Station 334	339 Queens Quay West	13,003
Fire Station 335	235 Cibola Ave.	4,402
Fire Station 341	555 Oakwood Ave.	9,268
Fire Station 342	106 Ascot Ave.	3,057
Fire Station 343	65 Hendrick Ave.	9,827
Fire Station 344	240 Howland Ave.	11,238
Fire Station 345	1287 Dufferin St.	12,809
Fire Station 411	75 Toryork Dr.	8,762
Fire Station 412	267 Humberline Dr.	7,029
Fire Station 413	1549 Albion Rd.	3,929
Fire Station 415	2120 Kipling Ave.	7,804
Fire Station 421	6 Lambton Ave.	9,461

Location Name	Address	Floor Area (ft^2)
Fire Station 422	590 Jane St.	7,944
Fire Station 423	358 Keele St.	12,335
Fire Station 424	462 Runnymede Rd.	5,866
Fire Station 425	83 Deforest Rd.	7,955
Fire Station 426	140 Lansdowne Ave.	12,486
Fire Station 431	308 Prince Edward Dr.	3,907
Fire Station 432	155 The East Mall	11,765
Fire Station 433	615 Royal York Rd.	5,038
Fire Station 434	3 Lunness Rd.	5,188
Fire Station 435	130 Eighth St.	6,889
Fire Station 441	947 Martin Grove Rd.	19,472
Fire Station 442	2015 Lawrence Ave. W	15,479
Fire Station 443	1724 Islington Ave.	3,929
Fire Station 444	666 Renforth Dr.	3,929
Fire Station 445	280 Burnhamthorpe Rd.	11,765
Fire Training Centre	4562 Sheppard Ave. E	7,998
HUSAR	21 Old Eglinton Ave.	11,485
Rotherham Ave 15	15 Rotherham Ave.	23,002
Toryork Office	40 Toryork Dr.	42,625

*Location added to building portfolio in 2016

These sites are managed by Toronto Fire Services, which is the largest fire service in Canada and the fifth largest fire service in North America.

TFS is Toronto's only hazards emergency response organization and provides residents, visitors, and businesses with protection against loss of life or property from various hazards through emergency response, prevention, and public education programs.

Most of these locations operate 24/7 and contain both a kitchen and living space, along with parking bays for fire trucks and other emergency vehicles.

A detailed map of all fire station locations can be found here: City of Toronto - Fire Station Locations

9.1.2 Summary of 2018 Energy Use and Costs

Of the 90 sites described in this report, all currently consume both electricity and natural gas, the latter of which is utilized for space heating and/or domestic hot water heating. All active fire stations will also utilize gas-powered emergency generators. Total electricity, natural gas, and water use and costs are summarized below.

Table 33: 2018 Energy Use and Costs – Fire Stations and Related Facilities

	Use	Rate	ekWh	Cost
Electricity	10,535,997 kWh	$0.149/kWh	10,535,997	$1,565,333
Natural Gas	2,171,307 m^3	0.306m^3	22,455,001	$663,603
Water	75,686 m^3	$3.803/$m^3$		$287,835
Total			32,990,998	$2,516,771

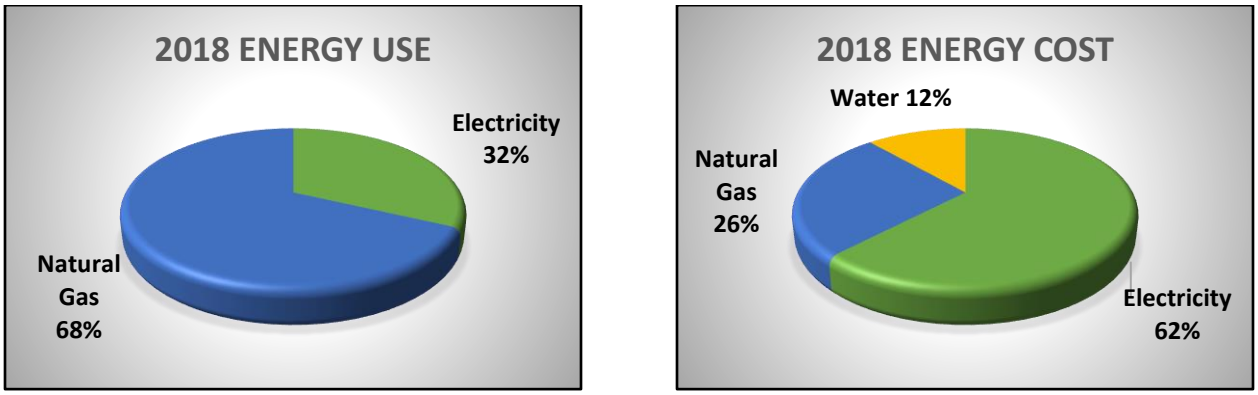


Figure 24: 2018 Energy Use and Costs – Fire Stations and Related Facilities

Note that natural gas accounts for 68% of total energy use, but only contributes to 26% of total costs. Compared to other building groups, natural gas consumption is significantly higher for fire stations, which is likely due to the presence of kitchens and the fact that these locations are staffed 24/7.

The Fire Academy, Fire Station 332, and Toryork Office all consume over 1,000,000 ekWh of energy annually and collectively contribute to 16% of the total energy use for this building group.

9.2 Previous Conservation Measures and Results

9.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented 14 energy efficiency projects in fire stations and related facilities.

Table 34: Energy Efficiency Measures (2014-2018) – Fire Stations and Related Facilities

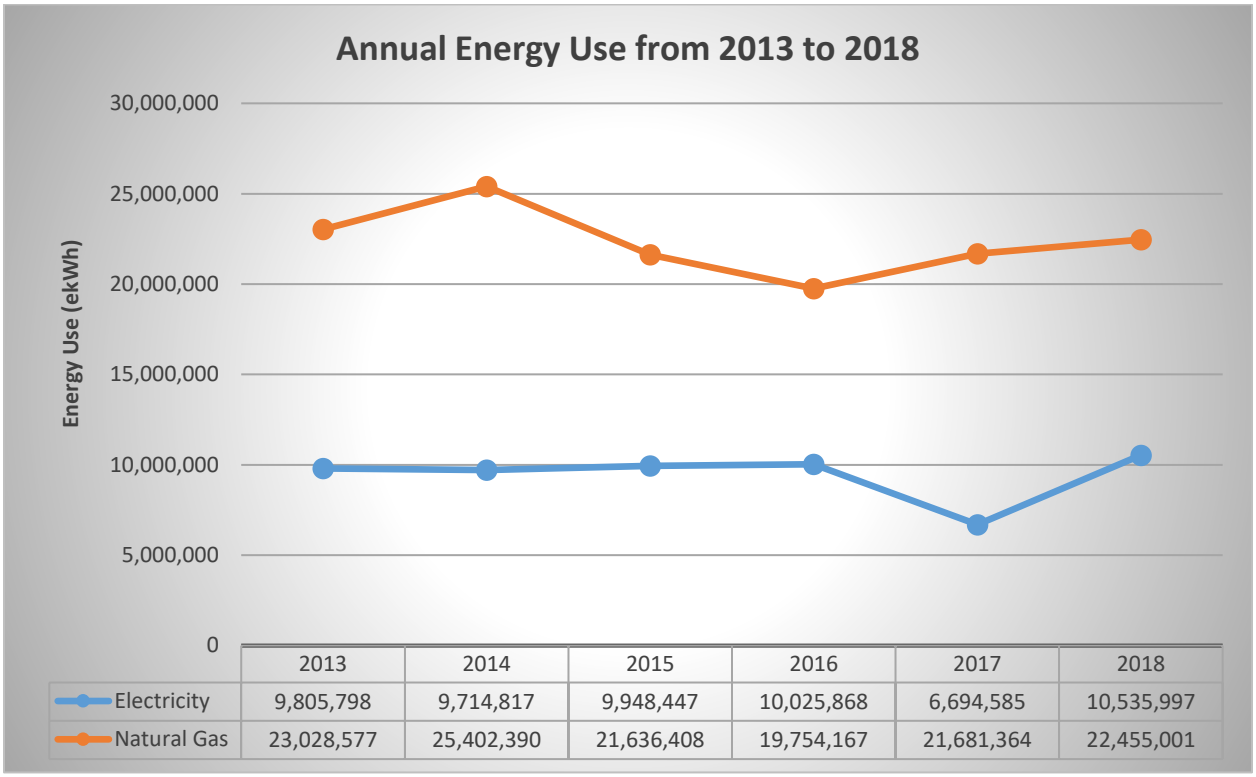
Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	**Number of Projects**	**Number of Buildings**	**Total Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Mechanical	2	2	$642,850*	Unavailable			
Structural	10	10	$2,718,033	Unavailable			
Structural/Mechanical	2	2	$1,429,096*	Unavailable			

*Total project cost includes charges for non-energy efficiency measures

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Roofing replacements took place at 10 fire stations, which should have measureable effect on both building heating and cooling consumption and costs.

9.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	9,805,798	9,714,817	9,948,447	10,025,868	6,694,585	10,535,997
Natural Gas	23,028,577	25,402,390	21,636,408	19,754,167	21,681,364	22,455,001

Figure 25: Actual Energy Use (2013-2018) – Fire Stations and Related Facilities

From 2013 to 2018, the following changes were observed in City of Toronto fire stations and related facilities:

- **Electricity:** 7% increase
- **Natural gas:** 2% decrease
- **Water:** 51% increase

Of the 89 locations present in the City's portfolio since 2013, 45 experienced an overall energy reduction with an average decrease of 14%.

As a result of increased electricity consumption and decreased natural gas consumption between 2013 and 2018, greenhouse gas emissions decreased by 90 tons in these buildings.

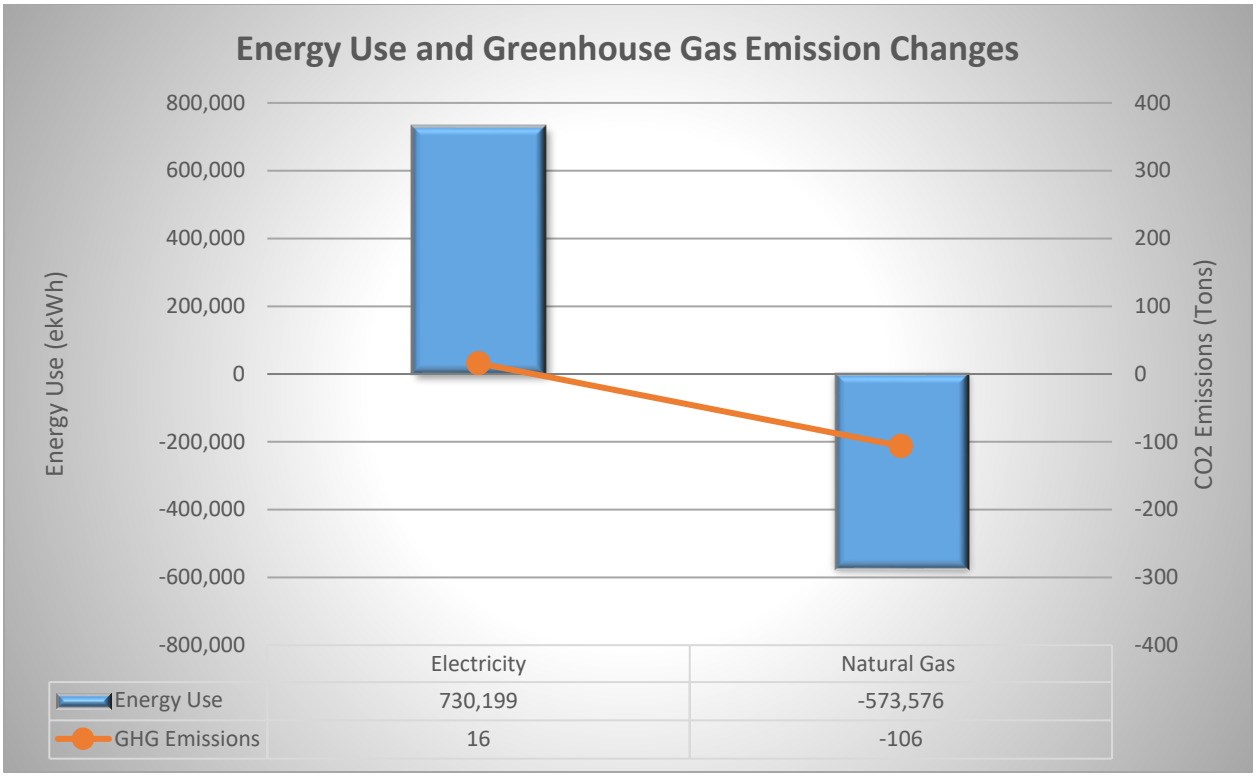


Figure 26: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Fire Stations and Related Facilities

9.3 Proposed Energy Conservation Measures and Initiatives 9 (2019-2024)

Between 2019 and 2024, the City of Toronto has 57 energy efficiency projects planned for implementation in fire stations and related facilities.

Table 35: Energy Efficiency Measures (2019-2024) – Fire Stations and Related Facilities

Project Summary			Project Cost	Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Structural	21	17	$3,616,776	Unavailable			
Electrical	13	9	$594,537	Unavailable			
Mechanical	23	17	$1,713,569	Unavailable			

For further details on individual measures, see Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 90 buildings in this group, energy efficiency measures are planned in 34 locations and multiple measures, or "deep retrofits", are planned in the following 13 buildings:

- Fire Services – East Command Offices
- Fire Station 112
- Fire Station 115

- Fire Station 143
- Fire Station 145
- Fire Station 211
- Fire Station 213
- Fire Station 215
- Fire Station 222
- Fire Station 233
- Fire Station 245
- Fire Station 313
- Fire Station 344

These projects will include significant mechanical, electrical, and structural work, which will collectively contribute to substantial consumption and cost reductions across all utilities.

10. Greenhouses

10.1 Energy Use and Building Characteristics

10.1.1 Building Characteristics

The City of Toronto is reporting on six greenhouses with a total indoor area of 150,265 ft^2. Note that some of these sites have extensive outdoor space, which is not included in the floor areas listed or the energy analysis presented.

Table 36: City of Toronto Greenhouses

Location Name	Address	Floor Area (ft^2)
Allan Gardens	160 Gerrard St. E	25,177
Centennial Greenhouse	149-151 Elmcrest Rd.	29,170
Cloud Gardens*	14 Temperance St.	6,243
High Park Greenhouses	15 High Park	60,386
Riverlea Greenhouse	919 Scarlett Rd.	17,018
Rockcliffe GreenHouse	301 Rockcliffe Blvd.	12,271

*Location closed as of November 2018 and scheduled to reopen in 2022

The City's greenhouses offer year-round exposure to plants from temperate, tropical, and arid zones. Additionally, several sites are home to a variety of wildlife including several species of fish, turtles, and birds.

For more details about the City's indoor and outdoor garden spaces, see the following link: City of Toronto - Gardens & Horticulture

10.1.2 Summary of 2018 Energy Use and Costs

Of six greenhouses described in this report, all utilize natural gas for space heating, with the exception of Cloud Gardens, which uses steam. Total electricity, natural gas, steam, and water use and costs are summarized below.

Table 37: 2018 Energy Use and Costs – Fire Stations and Related Facilities

	Use	Rate	ekWh	Cost
Electricity	1,326,752 kWh	0.146/kWh	1,326,752	$193,915
Natural Gas	1,159,434 m^3	0.250/m^3	11,990,519	$290,217
Steam	1,004 mlb	39.585/mlb	352,990	$39,763
Water	7,110 m^3	3.804/m^3		$27,045
Total			13,670,261	$550,940

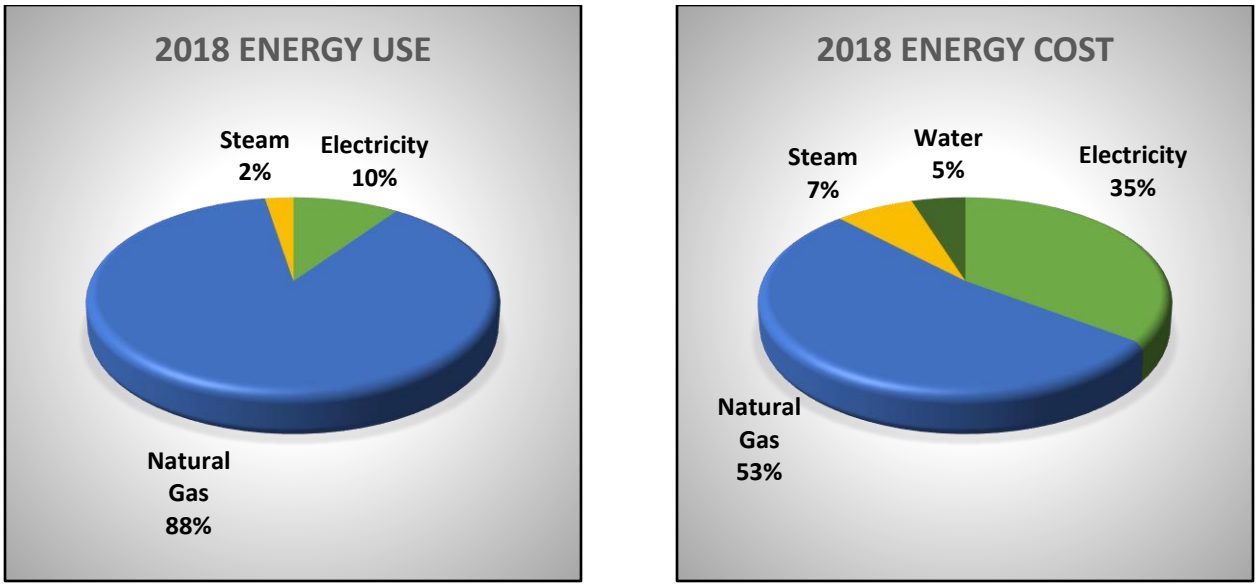


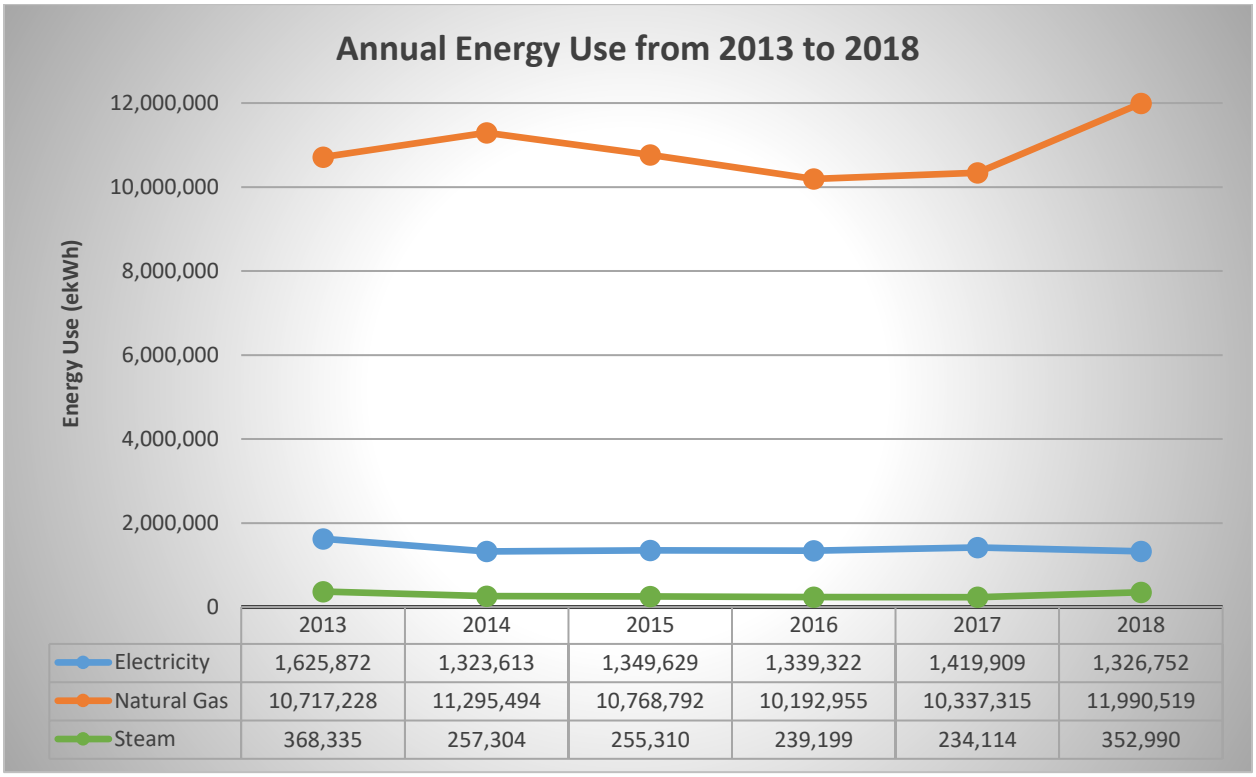
Figure 27: 2018 Energy Use and Costs - Greenhouses

Natural gas comprises 88% of the total energy use and 53% of total energy costs due to the uniquely high heating demands at these locations.

The High Park Greenhouses consume over 6,000,000 ekWh of energy annually and contribute to 45% of the total energy costs for this group.

10.2 Previous Conservation Measures and Results

10.2.1 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	1,625,872	1,323,613	1,349,629	1,339,322	1,419,909	1,326,752
Natural Gas	10,717,228	11,295,494	10,768,792	10,192,955	10,337,315	11,990,519
Steam	368,335	257,304	255,310	239,199	234,114	352,990

Figure 28: Actual Energy Use (2013-2018) - Greenhouses

From 2013 to 2018, the following changes were observed in energy use at City of Toronto greenhouses:

- **Electricity:** 18% decrease
- **Natural gas:** 12% increase
- **Steam:** 4% decrease
- **Water:** 3% decrease

Increases in overall consumption were observed at every location except Cloud Gardens and the Riverlea Greenhouse.

Due to decreases in electricity and steam consumption and an increase in natural gas consumption between 2013 and 2018, greenhouse gas emissions increased by 215 tons at these locations.

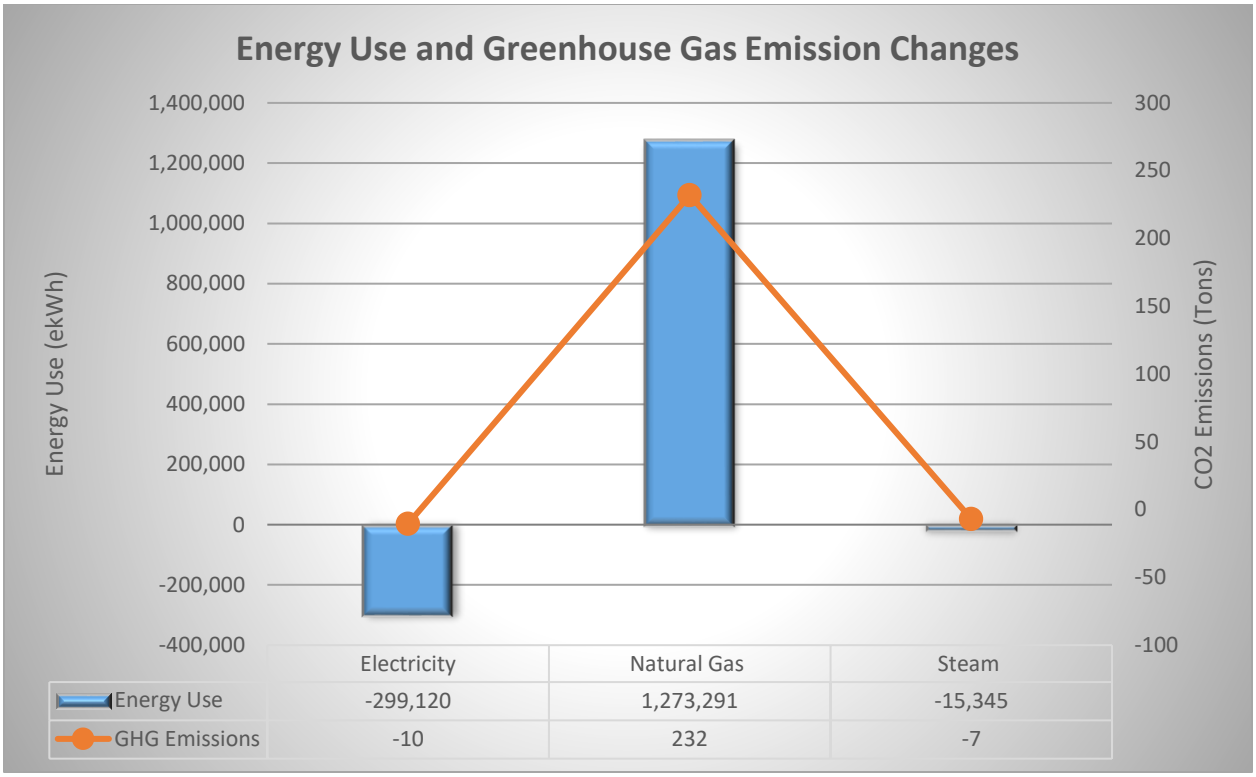


Figure 29: Energy Use and Greenhouse Gas Emission Changes (2013-2018) - Greenhouses

10.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City has plans to replace two boilers at Allen Gardens with energy efficiency models. Due to the high natural gas consumption at this site, this measure should result in significant energy and greenhouse gas emission reductions.

11. Indoor Recreational Facilities

11.1 Energy Use and Building Characteristics

11.1.1 Building Characteristics

The City of Toronto is reporting on 20 indoor recreational facilities with a total indoor area of 807,400 ft^2.

Table 38: City of Toronto Indoor Recreational Facilities

Location Name	Address	Floor Area (ft^2)
Agincourt Arena and Rec Centre	31 Glen Watford Dr.	93,398
Amesbury Arena	155 Culford Rd.	26,942
Birchmount Community Centre	93 Birchmount Rd.	46,166
Broadlands Rec Centre & A.I.R	19 Castlegrove Blvd.	10,667
Centennial Rec Centre (Ice Galaxy)	1967 Ellesmere Rd.	102,376
Chapley Community Centre / Wilmington Park	205 Wilmington Ave.	6,997
Cummer Arena	6000 Leslie St.	34,348
Glenlong Community Centre & A.I.R	35 Glen Long Ave.	10,236
Gord & Irene Risk Arena & Rec Centre	2650 Finch Ave. W	44,304
Goulding Arena & Rec Centre	45 Goulding Ave.	43,540
Grandravine Arena & Rec Centre	25 Grandravine Dr.	33,637
Heron Park Community Centre	292 Manse Rd.	52,377
Jimmie Simpson Rec Centre	870 Queen St. E	43,906
Ledbury Community Center	160 Ledbury St.	5,780
McGregor Park Community Centre	2231 Lawrence Ave. E	45,262
Mitchell Field Arena	89 Church Ave.	30,182
Oriole Community Centre	2975 Don Mills Rd.	64,347
Pleasantview Arena & Rec Centre	545 Van Horne Ave.	30,559
Roding Arena & Rec Centre	600 Roding St.	30,494
Wallace-Emerson Community Centre	1260 Dufferin St.	51,882

Indoor recreational facilities, as defined by this report, will contain both a pool or skating rink, one or both of which may be outdoors. Additionally, these locations may contain one or all of the following public-use spaces: gymnasiums, kitchens, multi-purpose rooms, computer rooms, lounges, craft rooms, dance studios, and fitness/weight rooms.

These locations are managed by Parks, Forestry, & Recreation and offer a variety of programs and services to the public including, but not limited to: arts & crafts, camps, skating/hockey programs, fitness/health program, cooking classes, and swimming lessons.

These locations are open year-round to the public, but outdoor skating rinks and pools are only available on a seasonal basis. Further information about recreation programs offered by the City of Toronto can be found here: City of Toronto - Recreation

11.1.2 Summary of 2018 Energy Use and Costs

Of the 20 sites described in this report, all currently consume both electricity and natural gas, the latter of which can be utilized for space heating, domestic hot water heating, pool water heating, and ice maintenance. Total electricity, natural gas, and water use and costs are summarized below.

Table 39: 2018 Energy Use and Costs – Indoor Recreational Facilities

	Use	Rate	ekWh	Cost
Electricity	19,309,321 kWh	$0.166/kWh	19,309,321	$3,200,701
Natural Gas	2,225,051 m^3	0.281/m^3	23,010,810	$625,157
Water	206,809 m^3	$3.908/$m^3$		$808,253
Total			42,320,131	$4,634,111

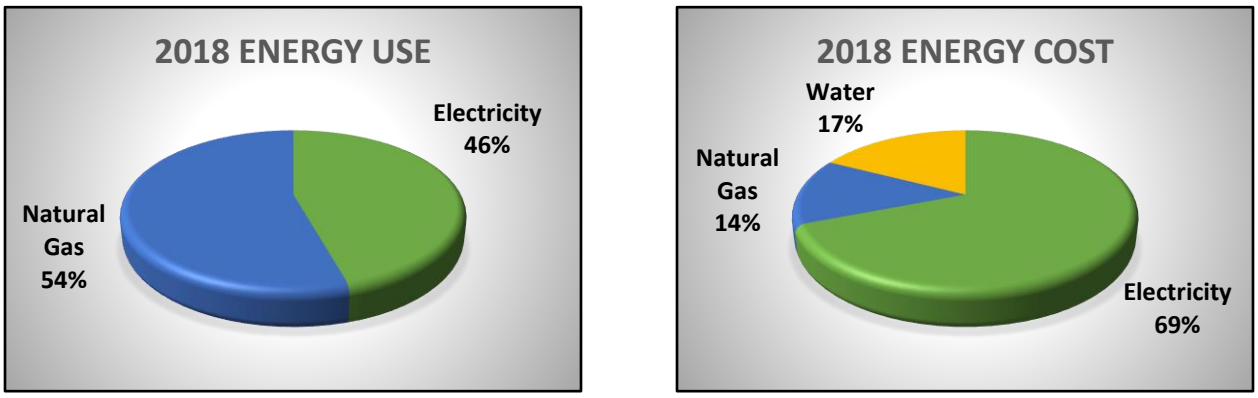


Figure 30: 2018 Energy Use and Costs – Indoor Recreational Facilities

Note that electricity accounts for 46% of total energy costs, but contributes disproportionately to 69% of overall energy costs.

Agincourt Arena and Rec Centre, Birchmount Community Centre, and Centennial Rec Centre all consume over 4,000,000 ekWh of energy annually and collectively contribute to 35% of the overall energy use for this group.

11.2 Previous Conservation Measures and Results

11.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented nine energy efficiency projects in indoor recreational facilities.

Table 40: Energy Efficiency Measures (2014-2018) – Indoor Recreational Facilities

Project Summary			Project Cost			Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Total Incentives Redeemed	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	4	4	$163,815	$15,708	$148,107	213,383	N/A	N/A	$31,367
Structural	3	3	$1,053,581*	N/A	$1,053,581	Unavailable			
Mechanical/Structural	1	1	$5,200,000*	N/A	$5,200,000	Unavailable			
Electrical/Mechanical/Structural	1	1	$140,000	N/A	$140,000	Unavailable			

*Total project cost includes charges for non-energy efficiency measures

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency projects include four LED lighting retrofits at Agincourt Arena & Rec Centre, Birchmount Community Centre, Centennial Rec Centre, and Cummer Arena. Collectively, these retrofits will result in annual electricity savings of approximately 213,383 kWh and $31,367.

11.2.2. Summary of 2013-2018 Energy Use

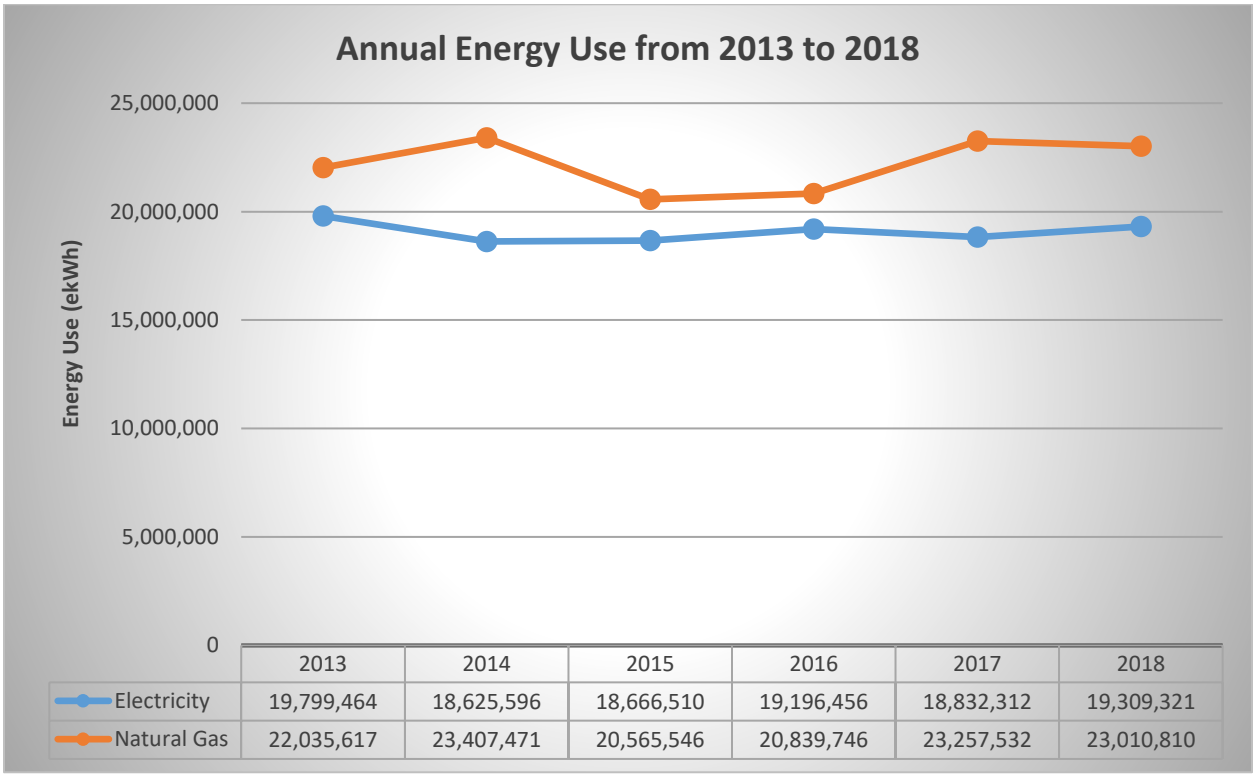


Figure 31: Actual Energy Use (2013-2018) – Indoor Recreational Facilities

From 2013 to 2018, the following changes were observed in energy use at City of Toronto indoor recreational facilities:

- **Electricity:** 2% decrease
- **Natural gas:** 4% increase
- **Water:** 30% decrease

Of the 20 buildings in this group, eight demonstrated a reduction in overall energy consumption with an average decrease of 14%.

As a result of decreased electricity consumption and increased natural gas consumption between 2013 and 2018, greenhouse gas emissions increased by 147 tons at these facilities.

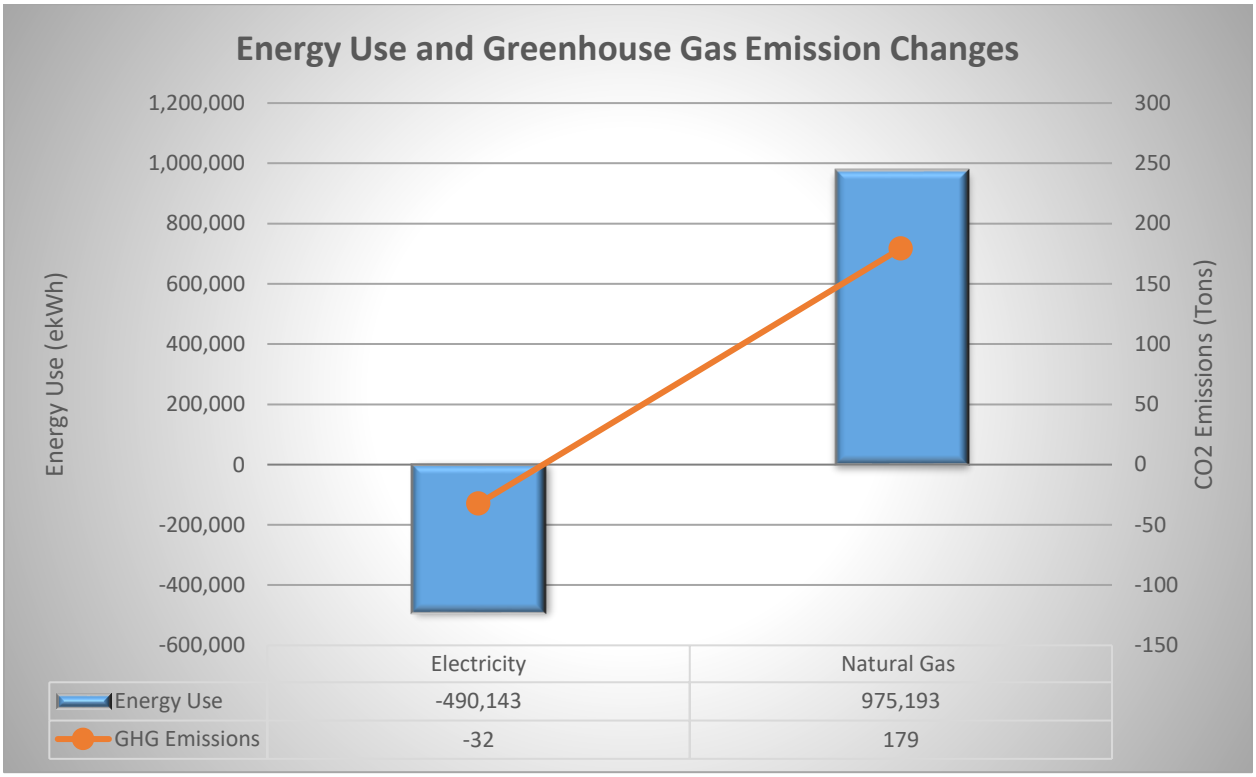


Figure 32: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Indoor Recreational Facilities

11.2.3 Case Study: Oriole Community Centre

Figure 33: Oriole Community Centre

The fully accessible Oriole Community Centre is located at 2975 Don Mills Road and offers the following facilities: gymnasium, outdoor pool, four multi-purpose rooms, fitness/weight room, games room, kitchen, lounge, and craft room.

This a free centre and registered programs in sports, music, and cooking are also offered. In 2014, this location underwent a significant renovation, which included significant structural and electrical energy efficiency measures.

Table 41: Energy Efficiency Measures (2014-2018) – Oriole Community Centre

Project Summary				Project Cost	Estimated Annual Utility Savings			
Project Type	**Project Description**	**Start Date**	**Completion Date**	**Total Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Structural/Electrical	Roofing, building envelope repairs, mechanical & pool deck	2014	2014	$5,200,000*	Unavailable			

*Total cost includes charges for measures unrelated to energy efficiency

As a result of these measures, electricity and natural gas use decreased by 27% and 22%, respectively, between 2013 and 2018. This is equivalent to 555,478 ekWh and $19,249 in savings.

11.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City of Toronto has plans to perform significant structural work at the Centennial Rec Centre, including a roof replacement. This work should have a significant impact on heating and cooling consumption and costs for this site. Further details can be found in Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

12. Indoor Sports Arenas

12.1 Energy Use and Building Characteristics

12.1.1 Building Characteristics

The City of Toronto is reporting on 26 indoor sports arenas with a total area of 916,684 ft^2.

Table 42: City of Toronto Indoor Sports Arenas

Location Name	Address	Floor Area (ft^2)
Albion Arena	1501 Albion Rd.	32,658
Angela James Arena	165 Grenoble Dr.	25,640
Baycrest Arena	160 Neptune Dr.	27,060
Bayview Arena	3230 Bayview Ave.	28,417
Centennial Park Arena	156 Centennial Park Rd.	72,050
Central Arena	50 Montgomery Rd.	32,001
Chris Tonks Arena	2801 Eglinton Ave.	23,638
Commander Park Community Centre	140 Commander Blvd.	56,317
Don Mills Arena	1030 Don Mills Rd.	27,857
Don Montgomery	2467 Eglinton Ave. E	89,125
Downsview Arena	1633 Wilson Ave.	34,218
East York Arena	888 Cosburn Ave.	30,257
East York Curling Club House	901 Cosburn Ave.	17,868
Fenside Arena	30 Slidell Cres.	26,307
Habitant Arena	3383 Weston Rd.	26,307
Herbert Carnegie Centennial Arena	580 Finch Ave. W	42,270
John Booth Arena & Rec Centre	230 Gosford Blvd.	27,007
Lambton Park Arena	4100 Dundas St. W	24,854
Long Branch Arena	75 Arcadian Cir.	25,629
Mimico Arena	31 Drummond St.	35,607
Phil White Arena	443 Arlington Ave.	25,941
Pine Point Arena	15 Grierson Rd.	32,001
Scarborough Arena Gardens	75 Birchmount Rd.	38,320
Scarborough Village Community Centre	3600 Kingston Rd.	58,125
Victoria Village Arena	190 Bermondsey Ave.	33,637
York Mills Arena	2539 Bayview Ave.	23,573

Indoor sports arenas, as defined by this report, contain an indoor ice rink, but not an indoor pool. Note that outdoor pools may be associated with some of these sites, but they are tracked under separate utility meters and are therefore not included in the energy analysis for these locations. Additionally, these locations may contain one or all of the following public-use spaces: gymnasiums, kitchen, multi-purpose rooms, computer rooms, lounges, craft rooms, dance studios, and fitness/weight rooms.

These locations are managed by Parks, Forestry, & Recreation and offer a variety of programs and services to the public including, but not limited to: arts & crafts, camps, skating/hockey programs, fitness/health programs, cooking classes, and curling (only at the East York Curling Club).

Further information about recreation programs offered by the City of Toronto can be found here: City of Toronto - Recreation

12.1.2 Summary of 2018 Energy Use and Costs

Of the 26 sites described in this report, all currently consume both electricity and natural gas, the latter of which can be utilized for space heating, domestic hot water heating, and ice maintenance. Total electricity, natural gas, and water use and costs are summarized below.

Table 43: 2018 Energy Use and Costs – Indoor Sports Arenas

	Use	Rate	ekWh	Cost
Electricity	18,028,483 kWh	$0.169/kWh	18,028,482	$3,042,610
Natural Gas	1,657,381 m^3	0.303/m^3	17,140,137	$501,656
Water	157,119 m^3	$4.113/$m^3$		$646,153
Total			35,168,620	$4,190,419

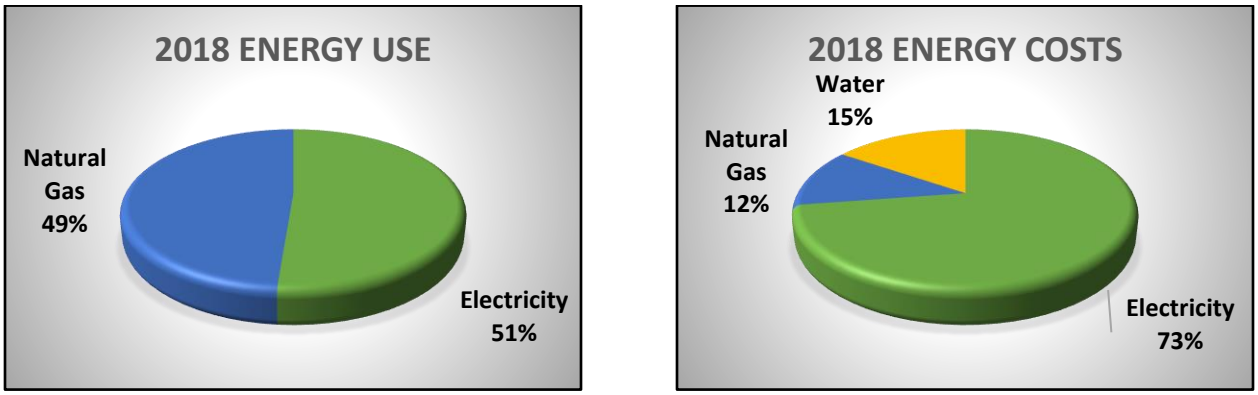


Figure 34: 2018 Energy Use and Costs – Indoor Sports Arenas

Note that electricity accounts for 51% of total energy use, but disproportionately contributes to 73% of overall costs. Conversely, natural gas accounts for 49% of total energy use, but only contributes to 12% of overall energy costs.

Central Arena, Don Montgomery, and Herbert Carnegie Centennial Arena all consume over 2,000,000 ekWh of energy annually and collectively account for 26% of the overall energy use for this group.

12.2 Previous Conservation Measures and Results

12.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented five energy efficiency projects in indoor sports arenas.

Table 44: Energy Efficiency Measures (2014-2018) – Indoor Sports Arenas

Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Structural	5	5	$3,197,000*	Unavailable			

*Total project cost includes charges for non-energy efficiency measures

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Four of these projects targeted Herbert Carnegie Centennial Arena, Scarborough Village Community Centre, East York Arena, and Commander Park Community Centre, which each consume over 1,000,000 ekWh of energy annually and reside in the top six consumers of energy for this building group.

12.2.2 Summary of 2013-2018 Energy Use

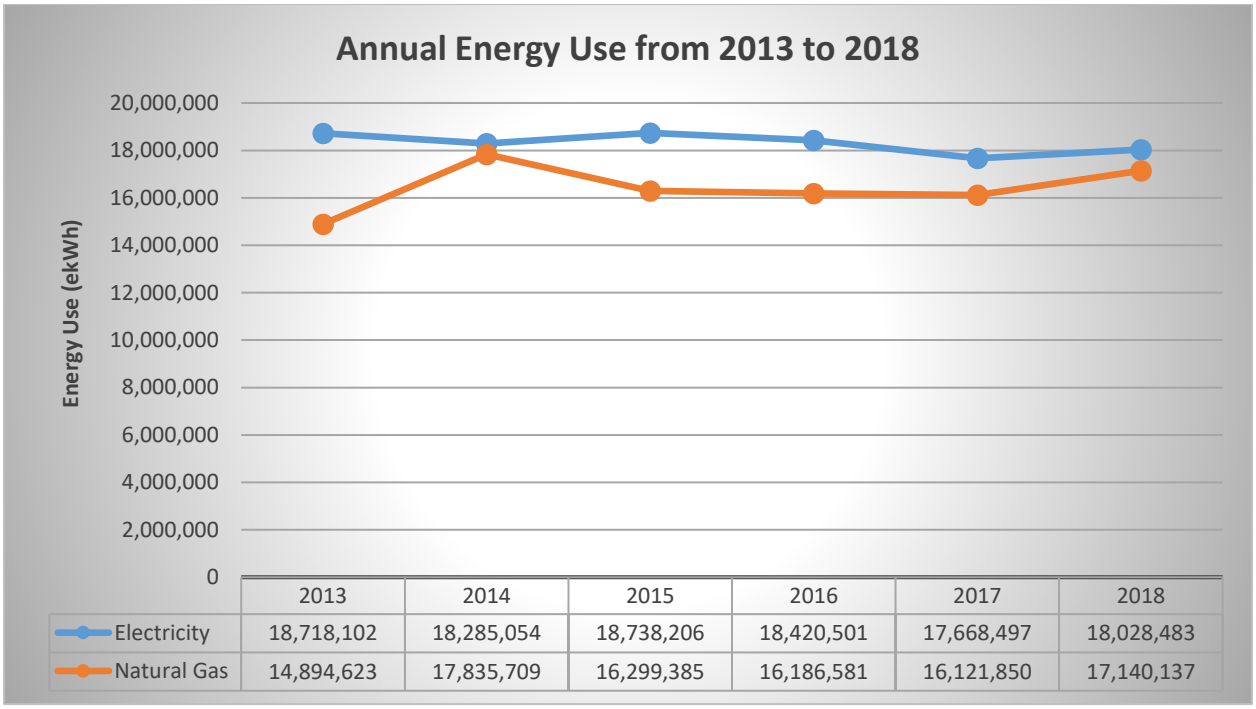


Figure 35: Actual Energy Use (2013-2018) – Indoor Sports Arenas

From 2013 to 2018, the following changes were observed in energy use at City of Toronto indoor sports arenas:

- **Electricity:** 4% decrease
- **Natural gas:** 15% increase
- **Water:** 39% decrease

Of the 26 buildings included in this group, 13 demonstrated a reduction in overall energy consumption between 2013 and 2018 with an average decrease of 13%.

As a result of decreased electricity consumption and increased natural gas consumption between 2013 and 2018, greenhouse gas emissions increased by 379 tons at these facilities.

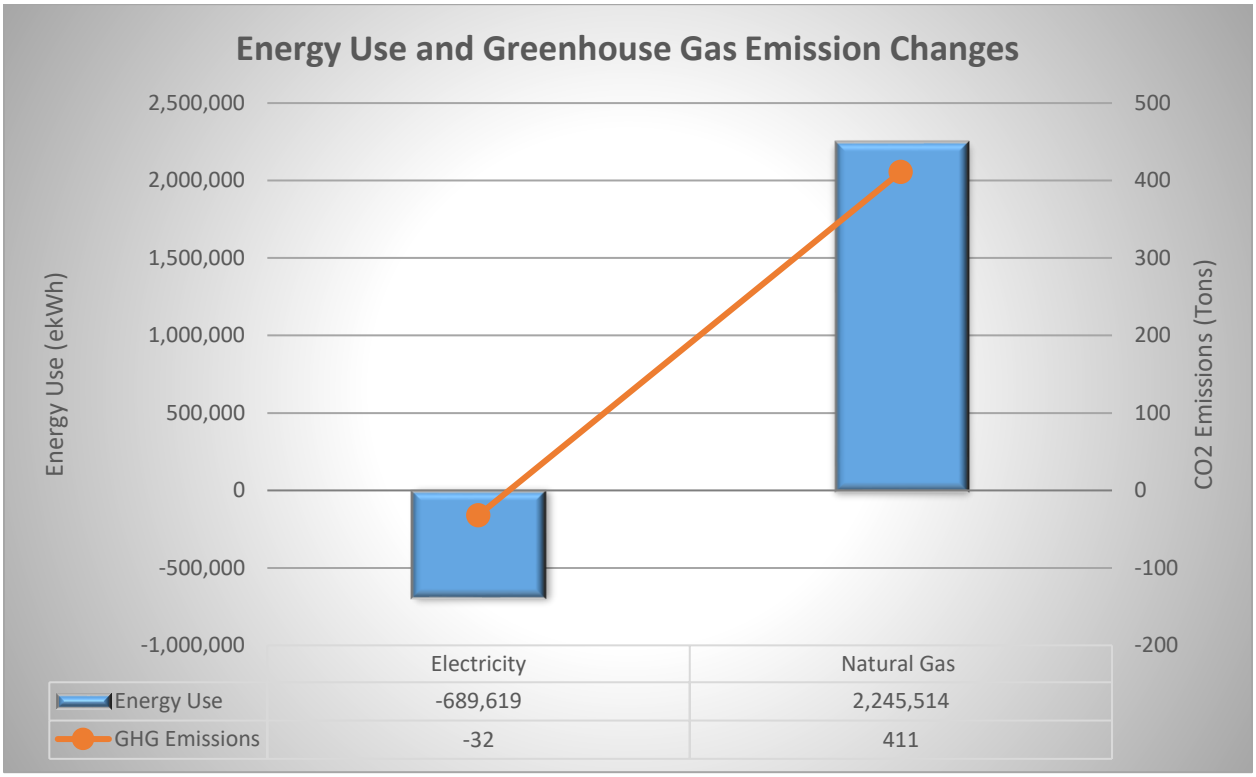


Figure 36: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Indoor Sports Arenas

12.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2014, the City of Toronto currently has three projects planned for implementation in indoor sports arenas.

Table 45: Energy Efficiency Measures (2019-2024) – Indoor Sports Arenas

Project Summary			Project Cost	Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Structural	1	1	TBD	Unavailable			
Structural/Mechanical	2	2	TBD	Unavailable			

For further details on individual measures, see Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

These projects will involve significant mechanical and building envelope work, which will be designed to lower natural gas and electricity consumption and costs at these sites.

13. Indoor Swimming Pools

13.1 Energy Use and Building Characteristics

13.1.1 Building Characteristics

The City of Toronto is reporting on 28 indoor swimming pools with a total indoor area of 1,019,390 ft^2.

Table 46: City of Toronto Indoor Swimming Pools

Location Name	Address	Floor Area (ft^2)
Albion Pool & Health Club	1485 Albion Rd.	20,688
Annette Rec Centre	333 Annette St.	20,774
Antibes Park	140 Antibes Dr.	18,492
Beaches Rec Centre	6 Williamson Rd.	14,445
Douglas Snow Aquatic Center	5100 Yonge St.	40,666
East York Community Centre	1081A Pape Ave.	31,000
Etobicoke Olympium	590 Rathburn Rd.	139,995
Fairmount Park Rec Centre	1725 Gerrard St.	4,359
Flemingdon Rec Centre & Pool	29 St. Dennis Dr.	34,348
Frankland Community Centre	825 Logan Ave.	3,681
Gus Ryder Pool and Health Club	1 Faustina Dr.	21,097
Harrison Pool	15 Stephanie St.	15,263
John Innes Community Centre	150 Sherbourne St.	24,176
John Innes Community Recreation Centre	150 Sherbourne St.	28,055
Joseph J. Piccininni Rec Centre	1369 St Clair Ave. W	70,030
Main Square Community Centre	245 Main St.	35,123
Matty Eckler Rec Centre	953 Gerrard St. E	47,383
McCormick Rec Centre	66 Sheridan Ave.	43,099
Norseman Community School and Pool	105 Norseman St.	19,052
North Toronto Mem Rec Centre*	200 Eglinton Ave. W	74,820
Regent Park Aquatic Centre**	640 Dundas St. E	30,505
Scadding Court Community Centre	707 Dundas St. W	46,694
St Albans Boys Club	843 Palmerston Ave.	23,293
St Lawrence Community Centre	224 The Esplanade	46,113
The Elms Pool and Community School	45 Golfdown Dr.	13,885
Trinity Rec Centre	155 Crawford St.	36,909
University Settlement House Rec Centre	23 Grange Rd.	47,566
York Recreation Centre***	115 Black Creek Dr.	67,879

*Location closed for construction as of 2018

**Location added to building portfolio in 2014

***Location added to building portfolio in 2016

Indoor swimming pools, as defined by this report, contain an indoor swimming pool, but not an indoor ice rink. Note that outdoor ice rinks may be associated with some of these sites, but they are tracked under separate utility meters and are therefore not included in the energy analysis for these locations. Additionally, these locations may contain one or all of the following public-use spaces: gymnasiums, kitchen, multi-purpose rooms, computer rooms, lounges, craft rooms, dance studios, and fitness/weight rooms.

These locations are managed by Parks, Forestry, & Recreation or a Board of Management and offer a variety of programs and services to the public including, but not limited to: arts & crafts, camps, swimming lessons, fitness/health programs, and cooking classes.

Further information about City of Toronto swimming facilities and programs can be found here: City of Toronto - Swimming & Splash Pads

13.1.2 Summary of 2018 Energy Use and Costs

Of the 26 indoor swimming pools described in this report, all currently consume both electricity and natural gas, the latter of which can be utilized for space heating, domestic hot water heating, and pool water heating. Total electricity, natural gas, and water use and costs are summarized below.

Table 47: 2018 Energy Use and Costs – Indoor Swimming Pools

	Use	Rate	ekWh	Cost
Electricity	18,111,038 kWh	$0.163/kWh	18,111,038	$2,946,311
Natural Gas	3,260,303 m^3	0.253/m^3	33,717,077	$826,229
Water	227,344 m^3	$3.881/$m^3$		$882,392
Total			51,828,115	$4,654,932

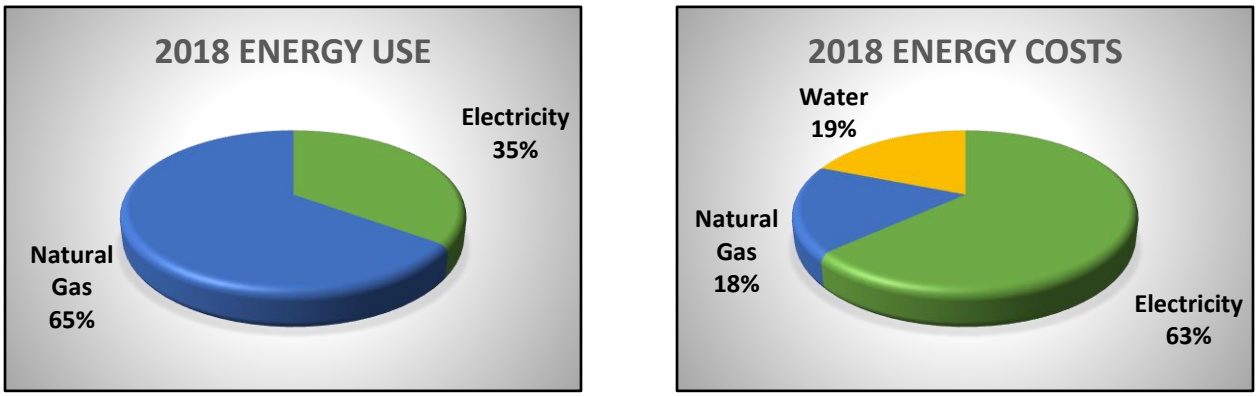


Figure 37: 2018 Energy Use and Costs – Indoor Swimming Pools

Note that natural gas comprises 65% of the total energy use at these sites due to the unique demands of pool water heating. Electricity only accounts for 35% of total costs, but contributes 63% to overall energy costs.

All buildings in this group consume over 1,000,000 ekWh of energy annually with the exception of Annette Rec Centre, Beaches Rec Centre, Fairmount Park Rec Centre, Frankland Community Centre, and John Innes Community Centre. The Etobicoke Olympium uses over 7,000,000 ekWh of energy annually and accounts for 14% of the total energy use for this building group.

13.2 Previous Conservation Measures and Results

13.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented 16 energy efficiency projects in indoor swimming pools.

Table 48: Energy Efficiency Measures (2014-2018) – Indoor Swimming Pools

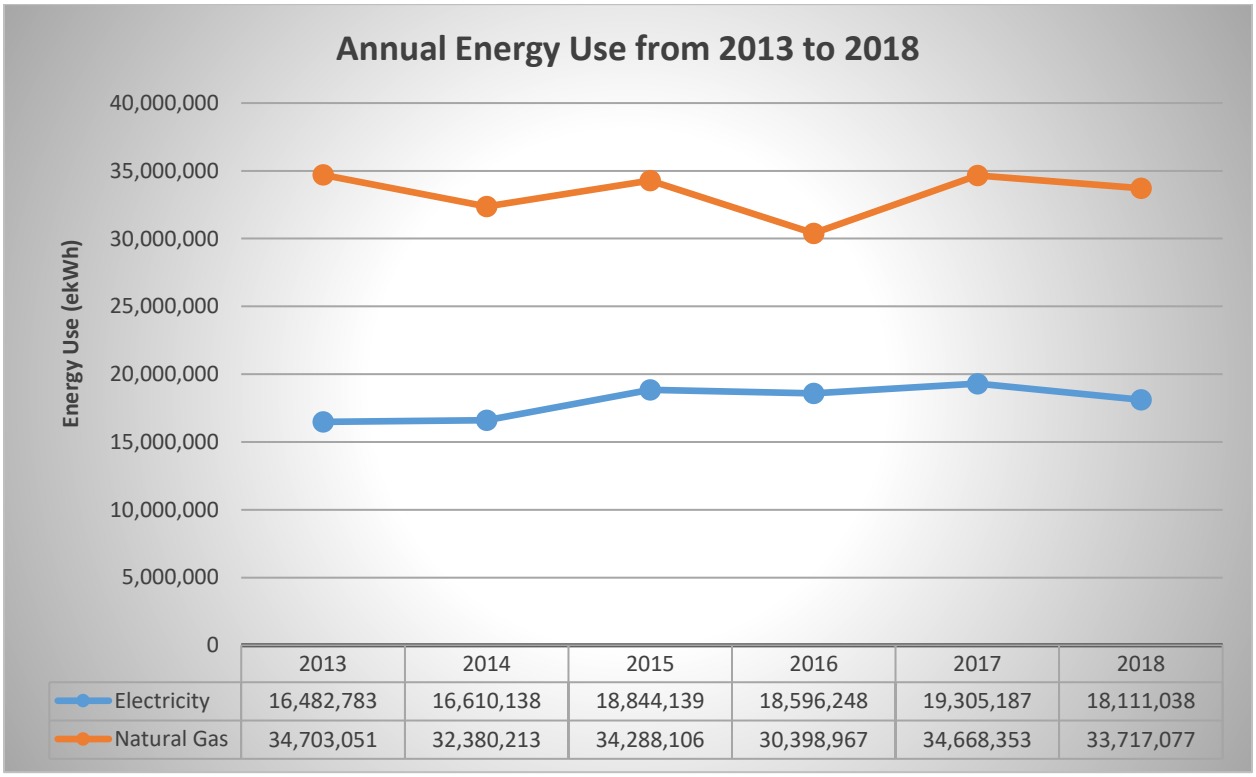
Project Summary			Project Cost			Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Total Incentives Redeemed	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	13	13	$972,988	$40,838	$932,150	1,005,736	N/A	N/A	$147,843
Structural	2	2	$634,000*	N/A	$634,000	Unavailable			
Mechanical	1	1	$50,000	N/A	$50,000	Unavailable			

*Total project cost includes charges for non-energy efficiency measures

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency measures include LED lighting retrofits at 13 locations, which will result in annual electricity savings of approximately 1,005,736 kWh and $147,843.

13.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	16,482,783	16,610,138	18,844,139	18,596,248	19,305,187	18,111,038
Natural Gas	34,703,051	32,380,213	34,288,106	30,398,967	34,668,353	33,717,077

Figure 38: Actual Energy Use (2013-2018) – Indoor Swimming Pools

Note that the natural gas reduction observed in 2016 was the culmination of consumption decreases observed across 18 different locations.

From 2013 to 2018, the following changes were observed in energy use at City of Toronto indoor swimming pools:

- **Electricity:** 10% increase
- **Natural gas:** 3% decrease
- **Water:** 12% decrease

Of the 25 buildings operational in both 2013 and 2018, 18 demonstrated a reduction in overall energy consumption with an average decrease of 15%.

As a result of increased electricity consumption and decreased natural gas consumption between 2013 and 2018, greenhouse gas emissions decreased by 89 tons at these facilities.

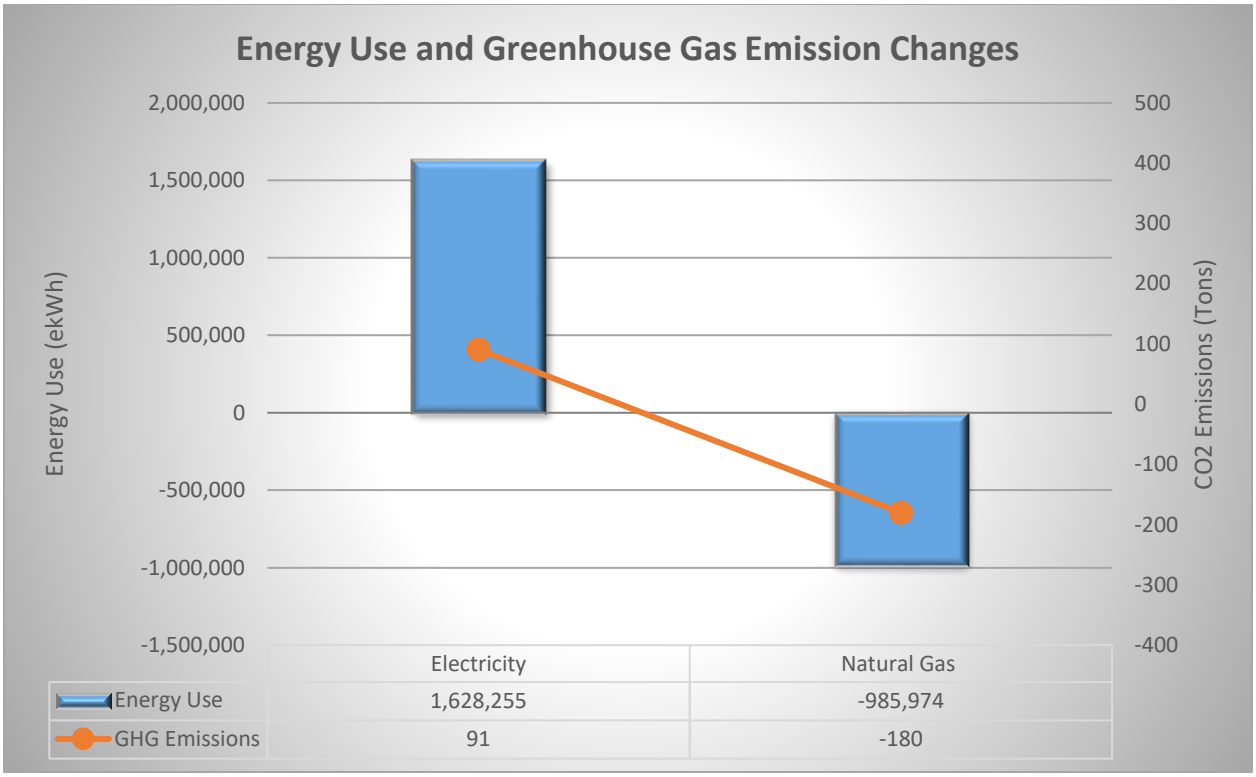


Figure 39: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Indoor Swimming Pools

13.2.3 Case Study: Albion Pool & Health Club

The Albion Community Centre & Pool is located at 1485 Albion Road and houses an indoor pool and a fitness/weight room. Aquatics programs are offered throughout the week and include basic swimming lessons, leadership, leisure, and length swimming.

Table 49: Energy Efficiency Measures (2014-2018) – Albion Community Centre & Pool

Project Summary				Project Cost			Estimated Annual Utility Savings			
Project Type	**Project Description**	**Start Date**	**Completion Date**	**Total Cost**	**Total Incentives Redeemed**	**Net Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Structural	Roofing replacement including insulation	2014	2014	$361,000*	N/A	$361,000	Unavailable			
Electrical	LED lighting retrofit over the pool	2017	2018	$63,682	$3,120	$60,562	41,362	N/A	N/A	$6,080

*Total project cost includes charges for non-energy efficiency measures

As result of these measures, electricity and natural gas use decreased by 25% and 2%, respectively, between 2013 and 2018. This is equivalent to 172,315 ekWh and $8,777 in savings.

13.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City of Toronto currently has 10 projects planned for implementation in indoor swimming pools.

Table 50: Energy Efficiency Measures (2019-2024) – Indoor Swimming Pools

Project Summary			Project Cost	Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	1	1	$43,527	Unavailable			
Mechanical	5	2	$343,179	Unavailable			
Structural	4	3	$714,648	Unavailable			

Further details about individual measures can be found in Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 28 indoor swimming pools, energy efficiency measures are planned in five locations and multiple measures, or a "deep retrofit", is planned at the University Settlement House Rec Centre.

14. Long-Term Care Homes

14.1 Energy Use and Building Characteristics

14.1.1 Building Characteristics

The City of Toronto is reporting on 10 long-term care homes with a total area of 1,622,273 ft^2.

Table 51: City of Toronto Long-Term Care Homes

Location Name	Address	Floor Area (ft^2)
Bendale Acres	2920 Lawrence Ave. E	210,327
Carefree Lodge	306 Finch Ave. E	67,490
Castleview Wychwood Towers	351 Christie St.	294,447
Cummer Lodge	205 Cummer Ave.	243,200
Fudger House	439 Sherbourne St.	118,995
Kipling Acres	2233 Kipling Ave.	184,590
Lakeshore Lodge	3197 Lakeshore Blvd.	88,964
Seven Oaks	9 Neilson Rd.	133,311
True Davidson Acres	200 Dawes Rd.	130,082
Wesburn Manor	400 The West Mall	150,867

All 10 sites are managed by Long-Term Care Homes & Services and provide 24-hour resident-focused care and various services including, but not limited to: nursing, behavioural support programs, medical services, recreational programming, nutritionist and food services, social work, and spiritual/religious care. Some locations also have specialized services including: language/cultural partnerships, short-stay respite beds, and on-side adult day programs.

In November 2015, Toronto City Council approved the Long-Term Care Homes & Services Capital Renewal Plan. The plan allows the division to proceed with the staged redevelopment of five long-term care homes to meet new design standards, explore affordable housing opportunities, and advance the vision to be leaders in excellence and ground-breaking services for healthy aging. Five sites have been identified for mandatory re-development: Carefree Lodge, Castleview Wychwood Towers, Fudger House, lakeshore Lodge, and Seven Oaks.

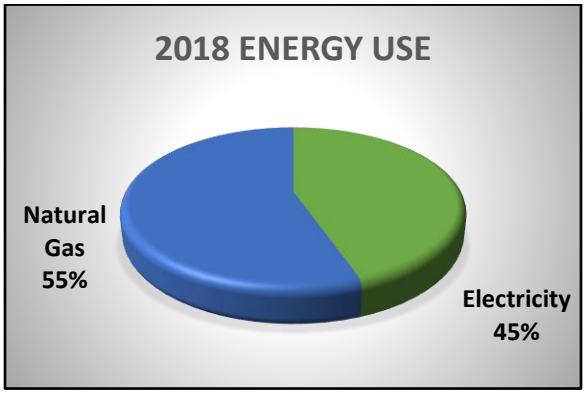
Further information about these sites and services offered by the City can be found here: City of Toronto: Long-Term Care Homes

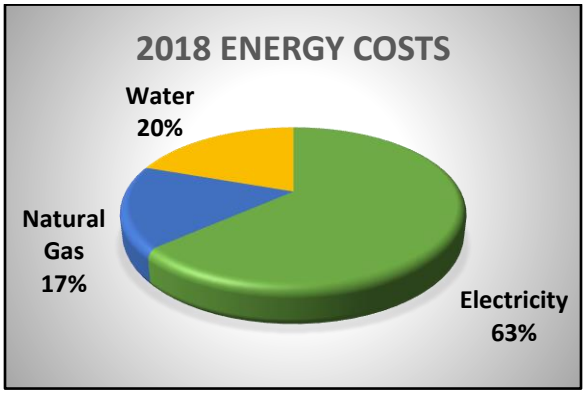
14.1.2 Summary of 2018 Energy Use and Costs

Of the 10 long-term care homes described in this report, all currently consume both electricity and natural gas, the latter of which can be utilized for space heating, domestic hot water heating, and kitchen use. Total electricity, natural gas, and water use and costs are summarized below.

Table 52: 2018 Energy Use and Costs – Long-Term Care Homes

	Use	Rate	ekWh	Cost
Electricity	31,027,183 kWh	$0.110/kWh	31,027,183	$3,399,370
Natural Gas	3,727,001 m^3	0.243/m^3	38,543,526	$904,004
Water	278,652 m^3	$3.771/$m^3$		$1,050,849
Total			69,570,709	$5,354,223





Note that electricity accounts for 45% of total energy use at these locations, but disproportionately contributes to 63% of total costs.

Cummer Lodge and Kipling Acres each consume over 10,000,000 ekWh annually and collectively account for 31% of the overall energy use for this group.

14.2 Previous Conservation Measures and Results

14.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented 16 energy efficiency projects in long-term care homes.

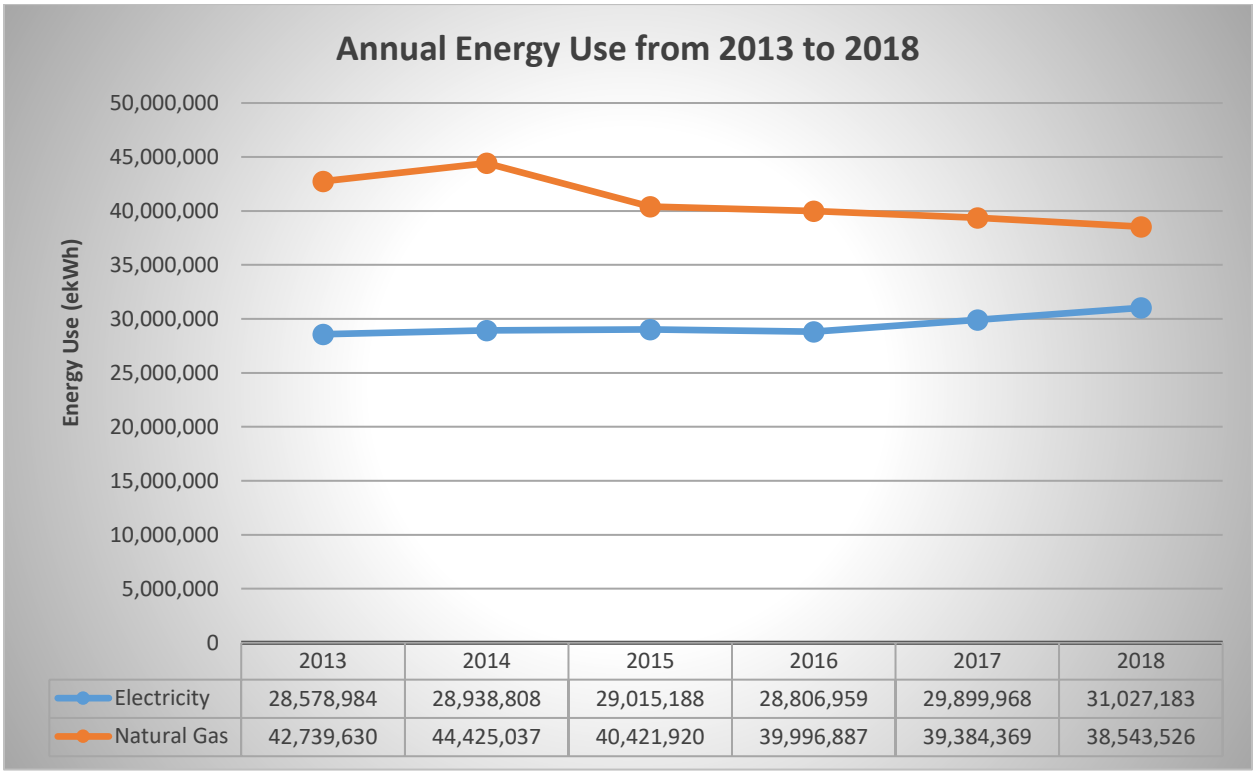
Table 53: Energy Efficiency Measures (2014-2018) – Long-Term Care Homes

Project Summary			Project Cost			Estimated Annual Utility Savings			
Project Type	**Number of Projects**	**Number of Buildings**	**Total Cost**	**Total Incentives Redeemed**	**Net Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Electrical	2	2	$1,350,000	N/A	$1,350,000	Unavailable			
Mechanical	12	10	$9,600,000	$50,000	$9,550,000	Unavailable			
Structural	1	1	$250,000	N/A	$250,000	Unavailable			
Electrical/Structural	1	1	$550,000	N/A	$550,000	Unavailable			

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Laundry upgrades were performed at all 10 long-term care locations, which should have a substantial effect on electricity and water usage and cost. Furthermore, multiple measures were employed at Bendale Acres, Carefree Lodge, Castleview Wychwood Towers, Cummer Lodge, Seven Oaks, and True Davidson Acres.

14.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	28,578,984	28,938,808	29,015,188	28,806,959	29,899,968	31,027,183
Natural Gas	42,739,630	44,425,037	40,421,920	39,996,887	39,384,369	38,543,526

Figure 41: Actual Energy Use (2013-2018) – Long-Term Care Homes

From 2013 to 2018, the following changes were observed in energy use at City of Toronto long-term care homes:

- **Electricity:** 9% increase
- **Natural gas:** 10% decrease
- **Water:** 19% decrease

Of the 10 sites in this building portfolio, six demonstrated a reduction in overall energy consumption between 2013 and 2018 with an average decrease of 7%.

As a result of increased electricity consumption and decreased natural gas consumption between 2013 and 2018, greenhouse gas emissions decreased by 701 tons.

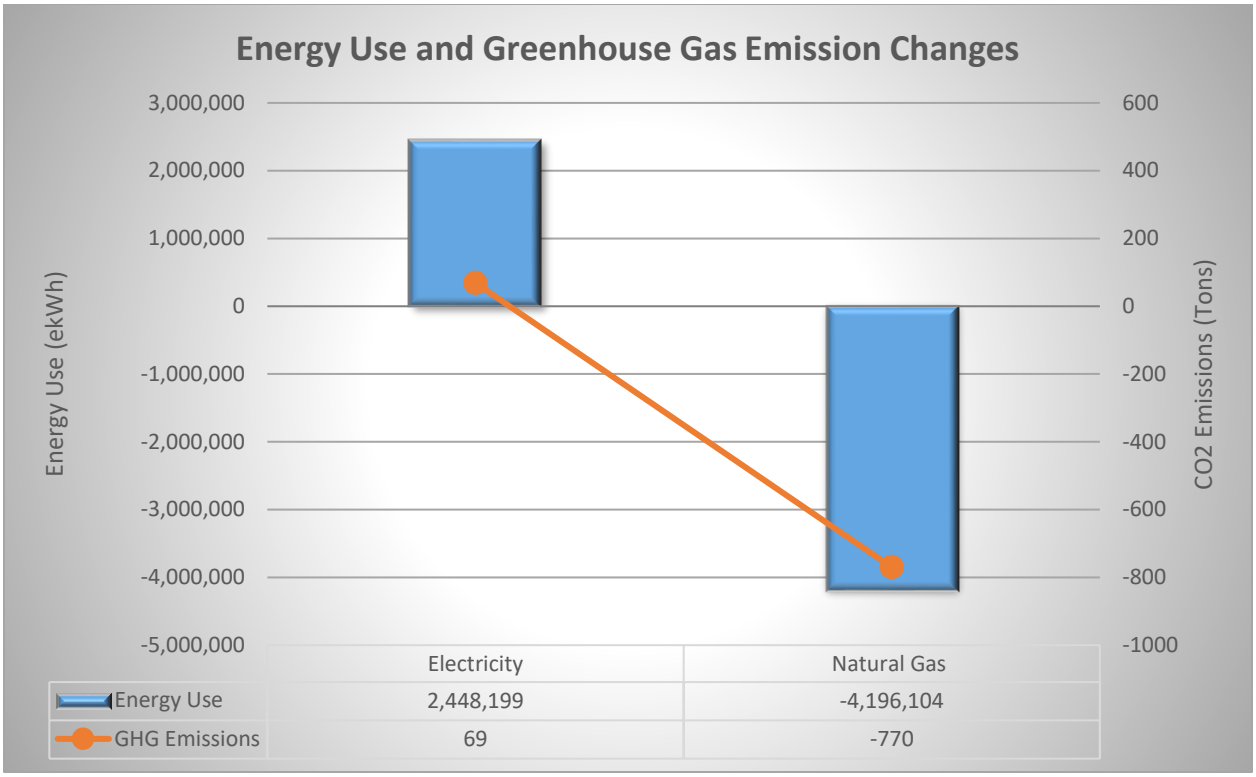


Figure 42: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Long-Term Care Homes

14.2.3 Case Study: Bendale Acres

Figure 43: Bendale Acres

Bendale Acres is located at 2920 Lawrence Avenue East and contains the following amenities for its residents:

- 100 private and 101 semi-private rooms
- Large windows and an atrium-style foyer with fireplace and skylights
- A large fenced garden
- An inter-denominational worship centre
- Spacious dining rooms, lounges, and recreational/rehabilitation rooms
- Two respite beds for individuals who may require admission to the facility's short-stay program

Table 54: Energy Efficiency Measures (2014-2018) – Bendale Acres

Project Summary				Project Cost	Estimated Annual Utility Savings			
Project Type	Project Description	Start Date	Completion Date	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Mechanical	Kitchen upgrades	2015	2016	$750,000	Unavailable			
Mechanical	HVAC upgrade	2016	2017	$1,000,000	Unavailable			
Mechanical	Laundry Upgrade	2017	2017	$1,500,000	Unavailable			

As a result of these measures, electricity and natural gas use decreased by 5% and 25%, respectively, between 2013 and 2018 at Bendale Acres. This is equivalent to 1,767,155 or $156,702 in savings.

14.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City of Toronto currently has eight energy efficiency projects planned for implementation in long-term care homes.

Table 55: Energy Efficiency Measures (2019-2024) – Long-Term Care Homes

Project Summary			Project Cost			Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Estimated Incentives	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	1	1	$2,000,000	TBD	$2,000,000	Unavailable			
Mechanical	5	4	$5,950,000	$70,000	$5,880,000	Unavailable			
Structural	2	3	$3,600,000	TBD	$3,600,000	Unavailable			

Further information about individual measures can be found in Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 10 long-term care homes, energy efficiency measures are planned in eight locations and multiple measures, or "deep retrofits", are planned at Bendale Acres and Cummer Lodge.

15. Parking Garages

15.1 Energy Use and Building Characteristics

15.1.1 Building Characteristics

The City of Toronto is reporting on 10 parking garages with a total indoor area of 1,236,319 ft^2.

Table 56: City of Toronto Parking Garages

Location Name	Address	Floor Area (ft^2)
1 Norton Ave.	1 Norton Ave.	16,996
110 Queen St. W	110 Queen St. W	598,473
40 York St.	40 York St.	32,300
16 Rosehill Ave.	16 Rosehill Ave.	55,700
2 Church St.	2 Church St.	125,023
20 Charles St. E	20 Charles St. E	43,000
20 Saint Andrews St.	20 Saint Andrews St.	45,000
25 Dundas St. E*	25 Dundas St. E	26,500
33 Queen St. E	33 Queen St. E	173,030
Beecroft Parking Lot	95 Beecroft Rd.	120,297

*Location added to building portfolio in 2016

These sites are operated by the Toronto Parking Authority and represent only a fraction of the on and off street parking available throughout the City. The TPA currently operates over 200 municipal parking lots containing over 22,000 spaces and the City's Bike Share program, which provides 3,750 bikes across 360 stations.

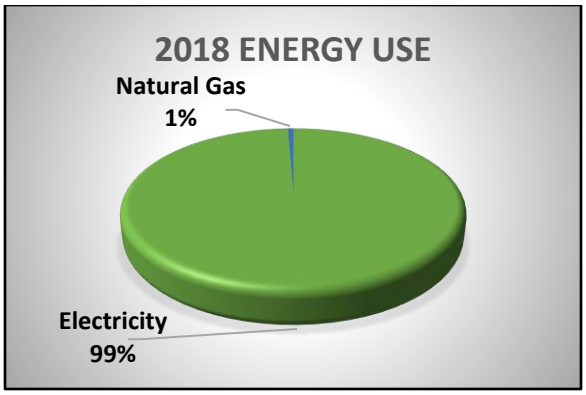
Further information about parking locations (including Bike Share) can be found here: City of Toronto - Parking

15.1.2 Summary of 2018 Energy Use and Costs

Of the 10 parking garages described in this report, natural gas is utilized for space heating at 110 Queen Street West and the Beecroft Parking Lot. All other sites use electricity for lighting and heating needs. Total electricity, natural gas, and water use and costs are summarized below.

Table 57: 2018 Energy Use and Costs – Parking Garages

	Use	Rate	ekWh	Cost
Electricity	12,601,689 kWh	$0.160/kWh	12,601,689	$2,018,163
Natural Gas	7,833 m^3	$0.531/$m^3$	81,007	$4,160
Water	3,774 m^3	$3.726/$m^3$		$14,061
Total			12,682,696	$2,036,384



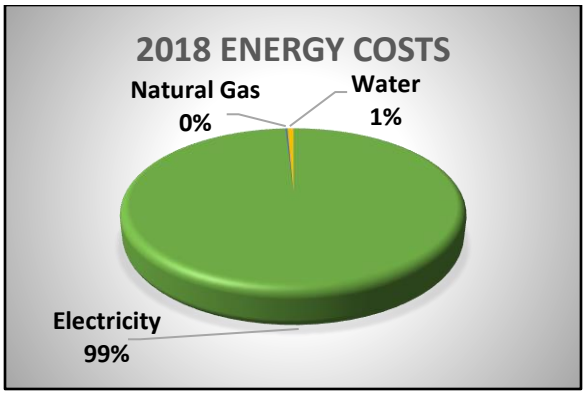


Figure 44: 2018 Energy Use and Costs – Parking Garages

Note that electricity accounts for 99% of both the total energy use and costs as the majority of energy use at these sites is utilized for lighting.

15.2 Previous Conservation Measures and Results

15.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented two energy efficiency projects in parking garages.

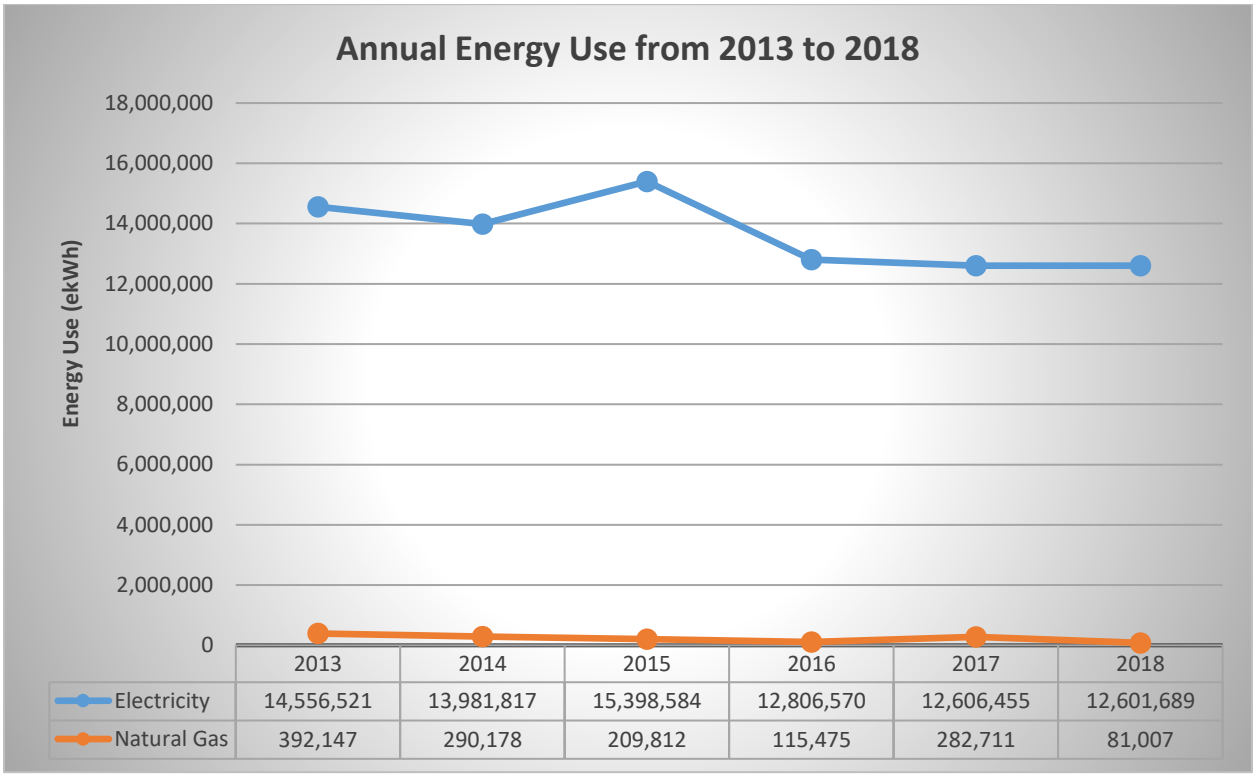
Table 58: Energy Efficiency Measures (2014-2018) – Parking Garages

Project Summary			Project Cost			Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Total Incentives Redeemed	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	2	2	$804,999	$54,533	$750,466	1,092,877	N/A	N/A	$160,653

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency measures included LED lighting retrofits at 33 Queen Street East and 20 Saint Andrews Street, which will result in annual electricity savings of approximately 1,092,877 kWh and $160,653.

15.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	14,556,521	13,981,817	15,398,584	12,806,570	12,606,455	12,601,689
Natural Gas	392,147	290,178	209,812	115,475	282,711	81,007

Figure 45: Actual Energy Use (2013-2018) – Parking Garages

From 2013 to 2018, the following changes in energy use were observed at City of Toronto parking garages:

- **Electricity:** 13% decrease
- **Natural gas:** 79% decrease
- **Water:** 1% decrease

Note that the 79% decrease in natural gas use is largely due to the cessation of gas service at 20 St. Charles Street in 2018.

Of the nine locations present in the City's portfolio since 2013, eight demonstrated a reduction in overall energy consumption with an average decrease of 23%.

As a result of decreased electricity and natural gas consumption between 2013 and 2018, greenhouse gas emissions decreased by 124 tons.

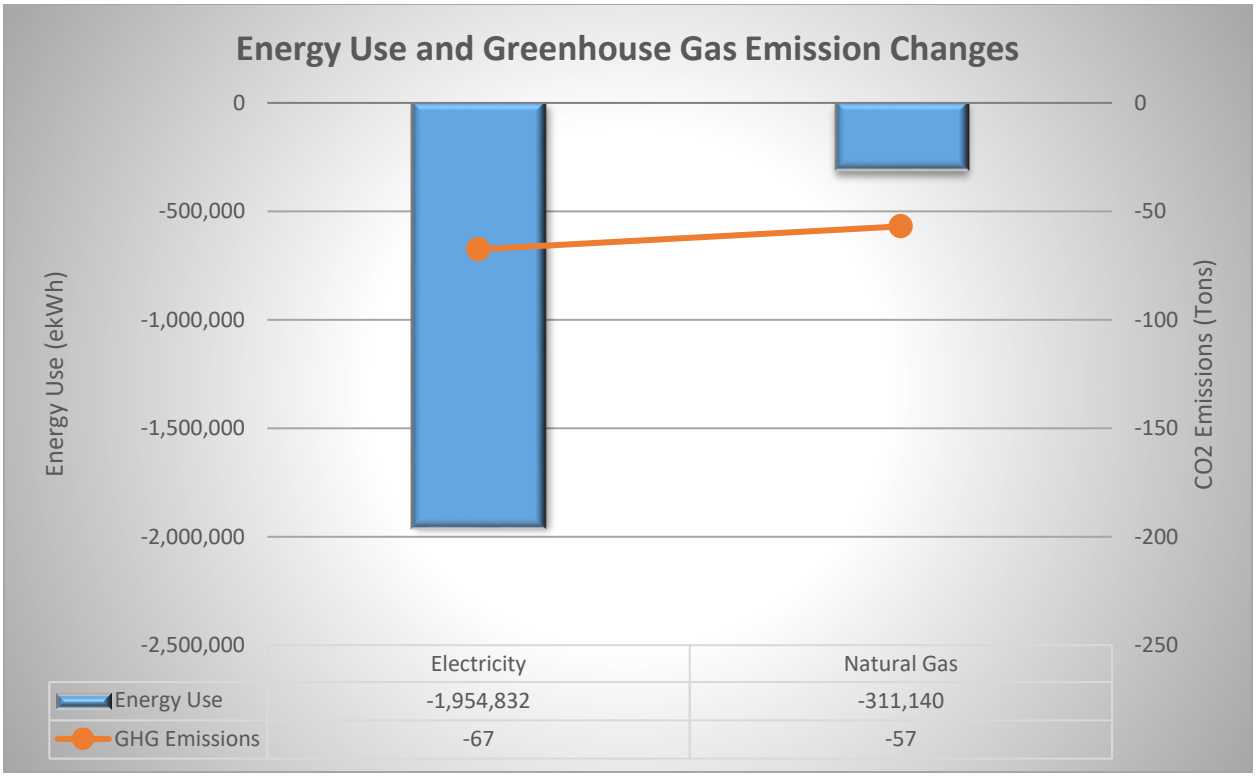


Figure 46: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Parking Garages

15.3 Proposed Energy Efficiency Measures and Initiatives (2019-2024)

The Toronto Parking Authority has plans to continue implementation of LED lighting retrofits across several of its parking lots and garages, but not currently at any of the locations described in this report.

16. Performing Arts Centres

16.1 Energy Use and Building Characteristics

16.1.1 Building Characteristics

The City of Toronto is reporting on three performing arts centres with a total area of 431,805 ft^2.

Table 59: City of Toronto Performing Arts Centres

Location Name	Address	Floor Area (ft^2)
Sony Centre	1 Front St. E	173,084
St Lawrence Centre	27 Front St. E	80,729
Toronto Centre for the Arts	5040 Yonge St.	177,992

The three performing arts centres described in this report each represent a unique aspect of Toronto's deep cultural and theatrical character.

The Toronto Centre for the Arts has presented countless orchestras, including annual shows by the Toronto Symphony Orchestra, Orchestra Toronto, and Tafelmusik. Further information about this site can be found here: Toronto Centre for the Arts

The Sony Centre (soon to be Meridian Hall) boasts 3,191 seats and hosts a variety of dance performances, concerts, comedy acts, festivals, galas, award shows, and films with live orchestra throughout the year. Further information about this site can be found here: Sony Centre

The St. Lawrence Centre contains lobbies, lounges, and two theatres, which are all available for rental for a variety of social and professional events. Further information about this site can be found here: St. Lawrence Centre

16.1.2 Summary of 2018 Energy Use and Costs

Steam is utilized at the Sony Centre and St. Lawrence Centre for space heating, while the Toronto Centre for the Arts employs natural gas for its heating needs. Total electricity, natural gas, and steam use and costs are summarized below.

Table 60: 2018 Energy Use and Costs – Performing Arts Centres

	Use	Rate	ekWh	Cost
Electricity	5,910,412 kWh	0.183/kWh	5,910,412	$1,079,540
Natural Gas	154,722 m^3	0.267/m^3	1,600,089	$41,334
Steam	9,098 mlb	34.534/mlb	3,197,047	$314,187
Water	20,982 m^3	3.787/m^3		$79,460
Total			10,707,548	$1,514,521

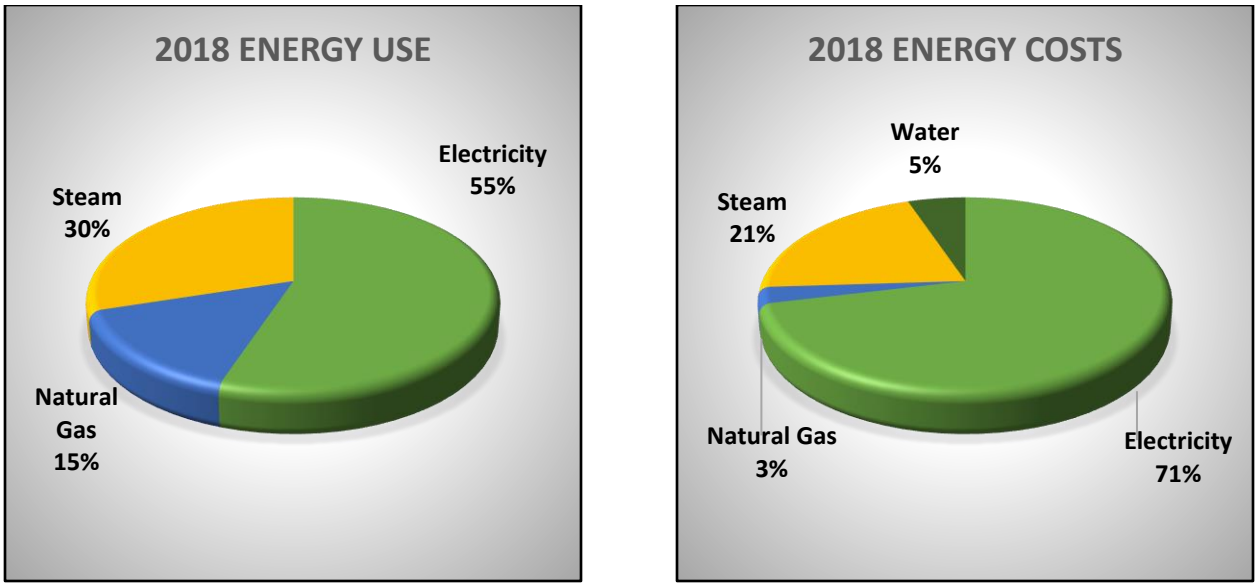


Figure 47: 2018 Energy Use and Costs – Performing Arts Centres

Note that electricity accounts for 55% of the total energy use for these sites, but disproportionately accounts for 71% of the overall energy costs.

16.2 Previous Conservation Measures and Results

16.2.1 Previous Energy Efficiency Measures (2014-2018)

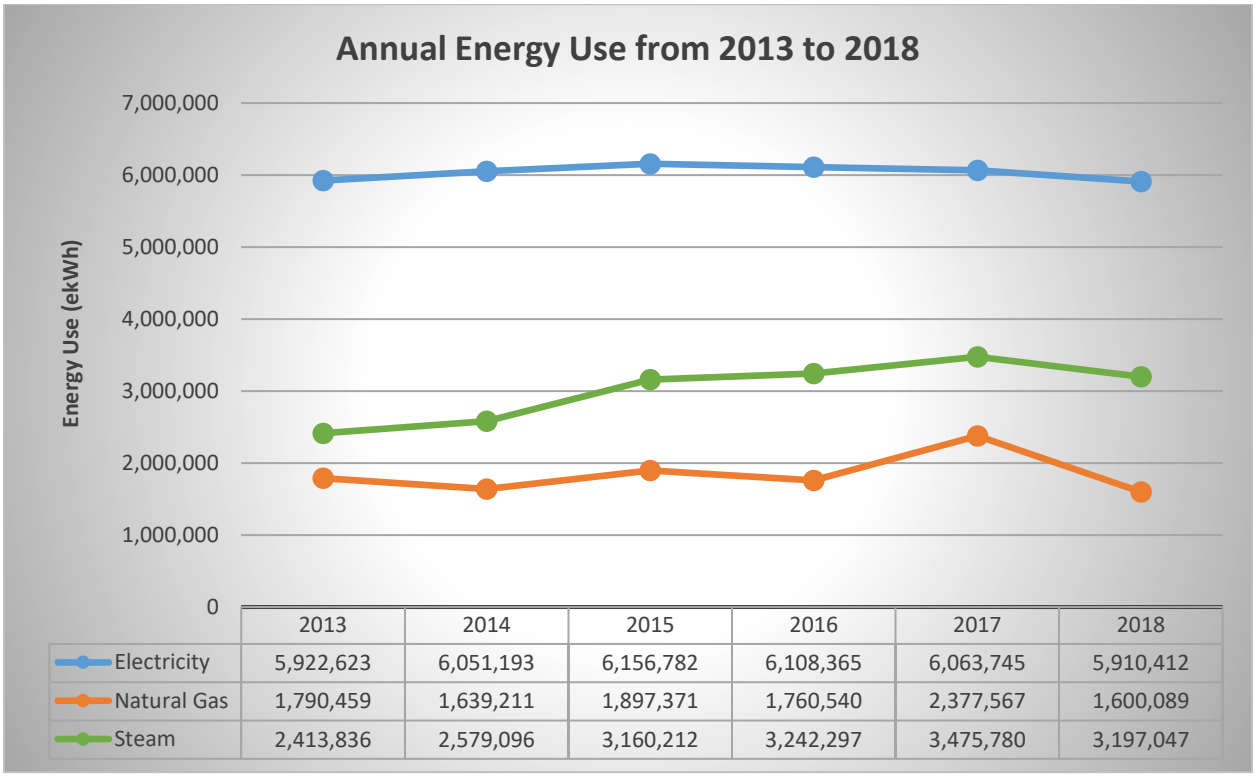
Between 2014 and 2018, the City of Toronto implemented one energy efficiency project in the performing arts centres.

Table 61: Energy Efficiency Measures (2014-2018) – Performing Arts Centres

Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	1	1	$44,000	19,127	N/A	N/A	$2,812

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

16.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	5,922,623	6,051,193	6,156,782	6,108,365	6,063,745	5,910,412
Natural Gas	1,790,459	1,639,211	1,897,371	1,760,540	2,377,567	1,600,089
Steam	2,413,836	2,579,096	3,160,212	3,242,297	3,475,780	3,197,047

Figure 48: Actual Energy Use (2013-2018) – Performing Arts Centres

From 2013 to 2018, the following changes were observed in energy use at City of Toronto performing arts centres:

- **Electricity:** Less than 1% decrease
- **Natural gas:** 11% decrease
- **Steam:** 32% increase
- **Water:** 17% decrease

St. Lawrence Centre and the Toronto Centre for the Arts experienced overall energy reductions of 16% and 4%, respectively, between 2013 and 2018.

As a result of increased electricity and steam consumption and decreased natural gas consumption between 2013 and 2018, greenhouse gas emissions increased by 144 tons at these facilities.

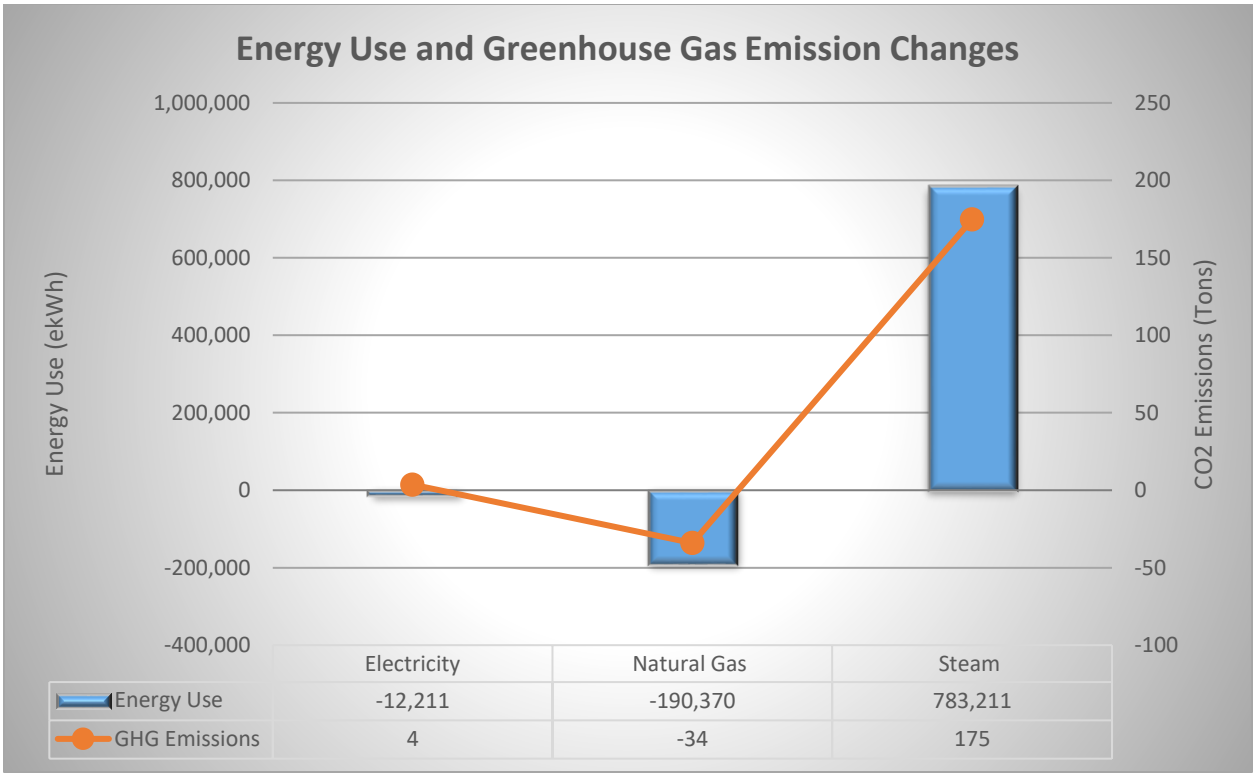


Figure 49: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Performing Arts Centres

16.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, a significant building automatic system upgrade is planned for the St. Lawrence Centre, which will reduce energy consumption and operating costs. Additionally, variable frequency drives are scheduled to be installed in pumps at all three performing arts centres. This will allow for greater control over building energy consumption, which will result in substantial reductions in heating and cooling costs.

17. Police Stations and Related Facilities

17.1 Energy Use and Building Characteristics

17.1.1 Building Characteristics

The City of Toronto is reporting on 36 police stations and related facilities for a total area of 2,397,112 ft^2.

Table 62: City of Toronto Police Stations and Related Facilities

Location Name	Address	Floor Area (ft^2)
#11 Police Division - NEW	2054 Davenport Rd.	62,000
#12 Police Division	200 Trethewey Dr.	25,780
#13 Police Division	1435 Eglinton Ave. W	20,344
#14 Police Division - NEW	11 St. Annes Rd.	64,200
#21 Police Division	791 Islington Ave.	7,492
#22 Police Division	3699 Bloor St. W	32,270
#23 Police Division New	5230 Finch Ave. W	57,264
#31 Police Division	40 Norfinch Dr.	35,489
#32 Police Division	30 Ellerslie Ave.	47,652
#33 Police Division	50 Upjohn Rd.	27,889
#41 Police Division	2222 Eglinton Ave. E	51,080
#42 Police Division	242 Milner Ave.	36,620
#43 Police Division	4331 Lawrence Ave. E	55,450
#51 Police Division New	51 Parliament St.	56,000
#52 Police Division	255 Dundas St. W	71,677
#53 Police Division	75 Eglinton Ave. W	52,183
#54 Police Division	41 Cranfield Rd.	23,358
#55 Police Division	101 Coxwell Ave.	23,519
Centre Island Police Division	0 Centre Island	1,001
Cherry Beach Life Station	0 Cherry St.	680
Detective Services Building	160-180 Duncan Mill Rd.	24,000
Emergency Task Force	300 Lesmill Rd.	35,995
Forensic Service, Store & Garage	2050 Jane St.	62,484
Humber Bay Life Station	2233 Lakeshore Blvd.	1,830
Intelligence Bureau	30 Upjohn St.	70,547
Leuty Beach	0 Leuty Ave.	1,000
Police Academy	70 Birmingham St.	302,735
Police Dog Service	44 Beechwood Dr.	9,440
Police Garage	18 Cranfield Rd.	33,024
Police Headquarters	40 College St.	425,000
Police Marine Headquarters	259 Queens Quay W	23,035
Property Bureau	799 Islington Ave.	43,992

Location Name	Address	Floor Area (ft^2)
Property Evidence Unit	330 Progress Ave.	287,752
Public Order	4610 Finch Ave. E	8,342
Radio, Electronics and Telecom	951 Wilson Ave.	18,000
Traffic Services and Garage	9 Hanna Ave.	297,988

These locations are operated by Police Services and most are police stations, which operate 24/7, but also included are the Police Academy, office facilities, and storage spaces.

17.1.2 Summary of 2018 Energy Use and Costs

Police Headquarters utilizes chilled water for building cooling, while all other facilities utilize either electricity or natural gas for space cooling and heating. Total electricity, natural gas, chilled water, and water use and costs are summarized below.

Table 63: 2018 Energy Use and Costs – Police Stations and Related Facilities

	Use	Rate	ekWh	Cost
Electricity	40,363,050 kWh	0.153/kWh	40,363,050	$6,156,228
Natural Gas	3,345,403 m^3	0.256/m^3	34,597,154	$857,889
Chilled Water	2,070,742 TonHr	0.146/TonHr	7,280,729	$303,018
Water	77,292 m^3	3.794/m^3		$293,251
Total			82,240,933	$7,610,386

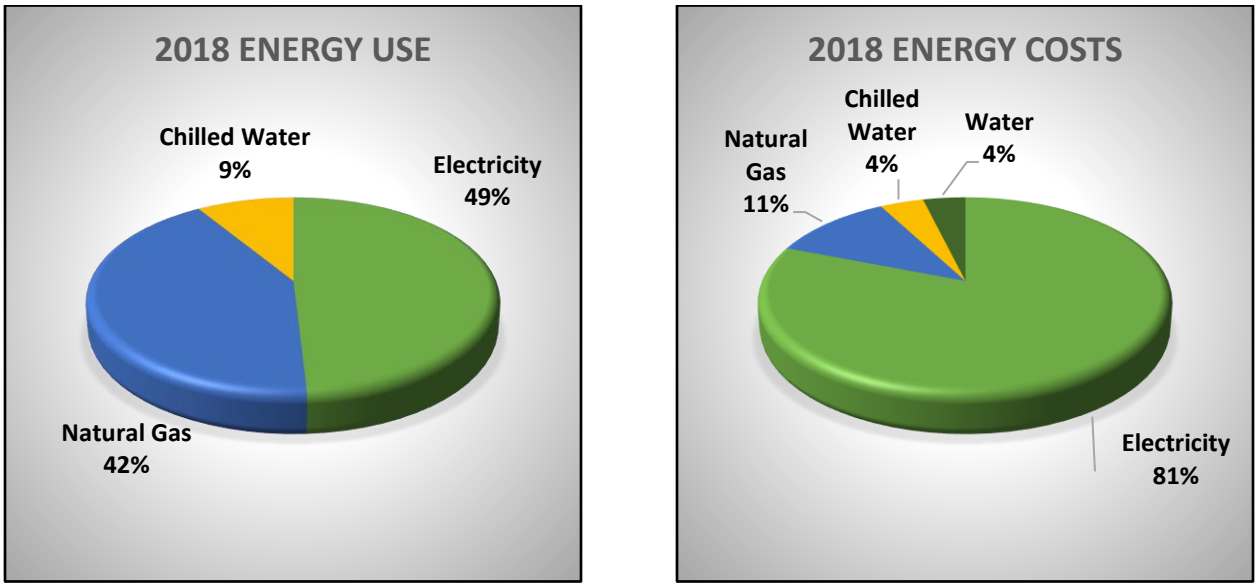


Figure 50: 2018 Energy Use and Costs – Police Stations and Related Facilities

Note that electricity accounts for 49% of overall energy use, but disproportionately contributes to 81% of total energy costs.

Police Headquarters and the Police Academy each consume over 12,000,000 ekWh of energy annually and collectively comprise 41% of the total energy use for this group.

17.2 Previous Conservation Measures and Results

17.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented 13 energy efficiency projects in police stations and related facilities.

Table 64: Energy Efficiency Measures (2014-2018) – Police Stations and Related Facilities

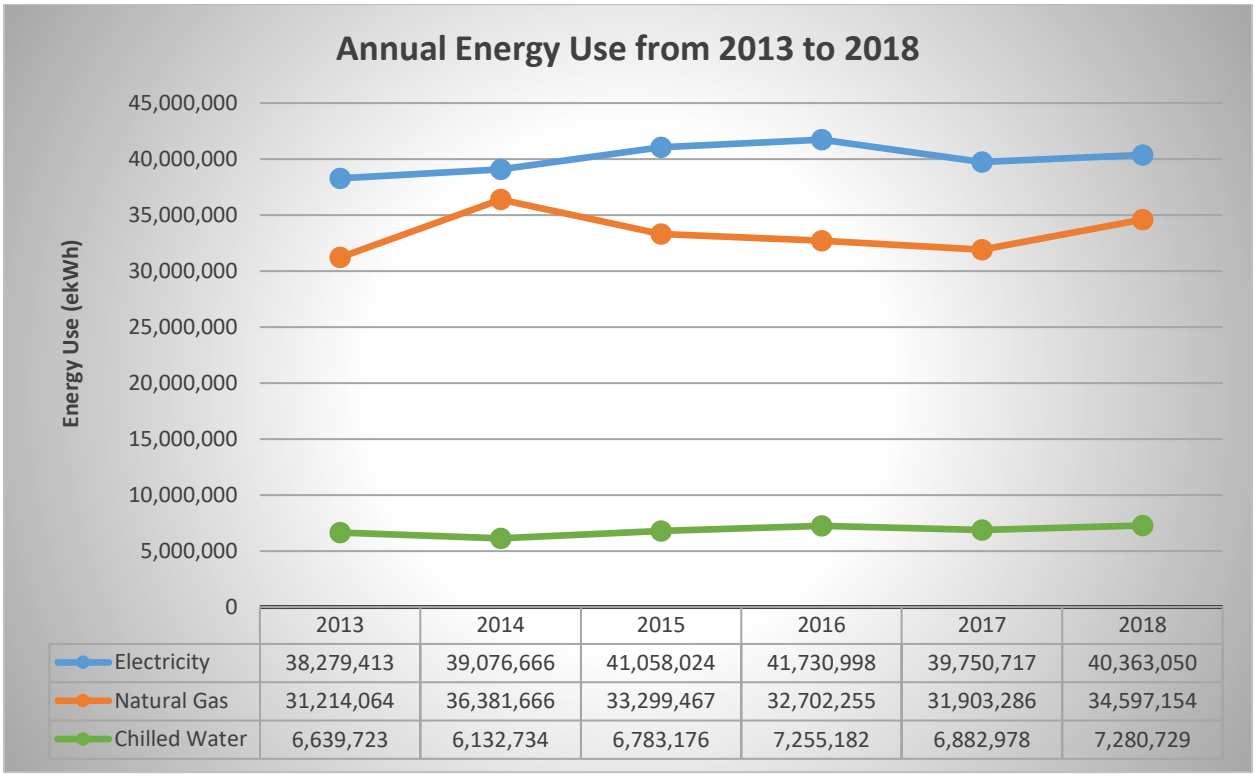
Project Summary			Project Cost			Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Total Incentives Redeemed	Net Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	1	1	$270,915	$55,273	$215,642	Unavailable			
Mechanical	7	7	$2,831,103	24319	$2,806,784	Unavailable			
Structural	4	4	$1,260,071	N/A	$1,260,071	Unavailable			
Structural/Mechanical	1	1	$235,437	N/A	$235,437	Unavailable			

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency measures included significant work at Police Headquarters, which is the largest consumer of energy in this group at over 21,000,000 ekWh annually. These measures include:

- Complete lighting retrofit of all T8 lamps, pot lights, exit signs, and sconces
- Replacement of fluid coolers, piping, and control valves for computer room units
- Roof replacement

17.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	38,279,413	39,076,666	41,058,024	41,730,998	39,750,717	40,363,050
Natural Gas	31,214,064	36,381,666	33,299,467	32,702,255	31,903,286	34,597,154
Chilled Water	6,639,723	6,132,734	6,783,176	7,255,182	6,882,978	7,280,729

Figure 51: Actual Energy Use (2013-2018) – Police Stations and Related Facilities

From 2013 to 2018, the following changes were observed in energy use at City of Toronto police stations and related facilities:

- **Electricity:** 5% increase
- **Natural gas:** 11% increase
- **Chilled water:** 10% increase
- **Water:** 35% decrease

Of the 26 reported locations, 19 demonstrated a reduction in overall energy consumption between 2013 and 2018 with an average decrease of 13%.

As a result of increased electricity, natural gas, and chilled water consumption between 2013 and 2018, greenhouse gas emissions increased by 703 tons.

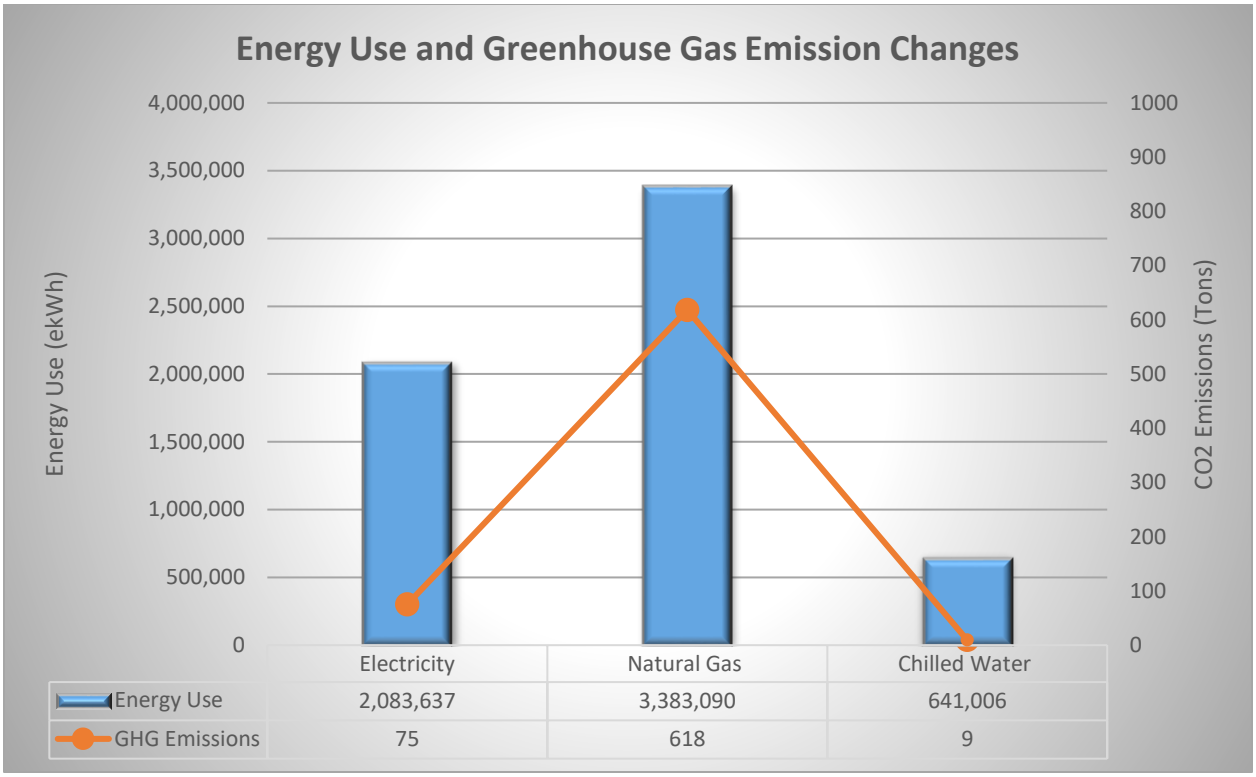


Figure 52: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Police Stations and Related Facilities

17.2.3 Case Study: Police Dog Services

Police Dog Services is located at 44 Beechwood Drive and the following energy efficiency measures undertaken between 2014 and 2018 can be seen below.

Table 65: Energy Efficiency Measures (2014-2018) – Police Dog Services

Project Summary				Project Cost	Estimated Annual Utility Savings			
Project Type	Project Description	Start Date	Completion Date	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Structural/Mechanical	Replace HVAC unit, building automation system, all flat sloped roofing, retaining walls	2017	2017	$235,437	Unavailable			

As a result of these measures, natural gas use decreased by 58% between 2013 and 2018, which is equivalent to 127,554 ekWh and $2,741 in savings.

17.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City of Toronto currently has 21 energy efficiency projects planned in police stations and related facilities.

Table 66: Energy Efficiency Measures (2019-2024) – Police Stations and Related Facilities

Project Summary			Project Cost			Projected Annual Utility Savings			
Project Type	**Number of Projects**	**Number of Buildings**	**Total Cost**	**Estimated Incentives**	**Net Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Electrical	5	5	$1,039,727	$56,393	$983,334	Unavailable			$322,750
Mechanical	7	5	$1,080,364	N/A	$1,080,364	Unavailable			
Structural	9	5	$6,856,547	N/A	$6,856,547	Unavailable			

Further details of individual measures can be seen in Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 26 locations in this group, energy efficiency measures are planned in 15 locations and multiple measures, or "deep retrofits", are planned at the Intelligence Bureau, Police Headquarters, and Property Bureau.

18. Public Libraries and Related Facilities

18.1 Energy Use and Building Characteristics

18.1.1 Building Characteristics

The City of Toronto is reporting on 88 public libraries and related facilities with a total area of 1,740,380 ft^2.

Table 67: City of Toronto Public Libraries and Related Facilities

Location Name	Address	Floor Area (ft^2)
Agincourt District	155 Bonis Ave.	27,000
Albert Campbell District	496 Birchmount Rd.	26,100
Albion	1515 Albion Rd.	29,000
Amesbury Park	1565 Lawrence Ave. W	6,320
Annette Street	145 Annette St.	7,806
Barbara Frum	20 Covington Rd.	39,223
Bayview	2901 Bayview Ave.	6,333
Beaches	2161 Queen St. E	8,000
Bendale	1515 Danforth Rd.	8,500
Black Creek	1700 Wilson Ave.	5,782
Bloor Gladstone	1101 Bloor St. W	20,627
Brentwood	36 Brentwood Rd. N	17,500
Brookbanks	210 Brookbanks Dr.	7,933
Cedarbrae	545 Markham Rd.	31,506
Centennial	578 Finch Ave. W	6,866
Cliffcrest	3017 Kingston Rd.	4,859
College Shaw	766 College St.	7,684
Danforth Coxwell	1675 Danforth Ave.	9,617
Davenport	1246 Shaw St.	3,604
Dawes Road	416 Dawes Rd.	6,740
Deer Park	40 St. Clair Ave. E	16,558
Don Mills	888 Lawrence Ave. E	21,563
Downsview	2793 Keele St.	20,016
Dufferin St Clair	1625 Dufferin St.	11,208
East Service Building*	1076 Ellesmere Rd.	20,040
Eatonville	430 Burnhamthorpe Rd.	12,203
Eglinton Square*	1 Eglinton Square	10,000
Elmbrook Park	2 Elmbrook Cres.	3,600
Evelyn Gregory	120 Trowell Ave.	6,200
Fairview Mall	35 Fairview Mall Dr.	69,458
Fort York**	170 Fort York	16,008
Gerrard Ashdale	1432 Gerrard St. E	6,504

Location Name	Address	Floor Area (ft^2)
Goldhawk Park	295 Alton Towers Cir.	8,000
Guildwood	123 Guildwood Pkwy.	3,010
High Park	228 Roncesvalles Ave.	8,850
Highland Creek	3550 Ellesmere Rd.	7,000
Hillcrest	5801 Leslie St.	7,473
Humber Bay	200 Parklawn Rd.	2,400
Humber Summit	2990 Islington Ave.	9,040
Jane & Dundas	620 Jane St.	11,955
Jane Sheppard	1906 Sheppard Ave. W	7,000
Jones	118 Jones Ave.	3,636
Kennedy Eglinton	2380 Eglinton Ave. E	6,713
Leaside	165 McRae Dr.	12,000
Lillian H Smith	239 College St.	38,935
Locke	3083 Yonge St.	11,647
Long Branch	3500 Lakeshore Blvd. W	6,418
Main Street	137 Main St.	8,664
Maria A Shchuka	1745 Eglinton Ave. W	25,475
Maryvale*	85 Ellesmere Rd.	4,421
Mimico	47 Station Rd.	17,469
Morningside	4279 Lawrence Ave. E	7,000
Mount Dennis	1123 Weston Rd.	11,350
Mount Pleasant	599 Mt. Pleasant Rd.	5,829
New Toronto	110 Eleventh St.	9,925
North York	120 Martin Ross Ave.	28,000
North York Central	5120 Yonge St.	168,022
North York Central Pop-up***	5150 Yonge St.	Unavailable
Northern District	40 Orchard View Blvd.	48,654
Northern Elms**	123B Rexdale Blvd	3,936
Oakwood Village	341 Oakwood Ave.	17,270
Palmerston	560 Palmerston Ave.	8,493
Pape Danforth	701 Pape Ave.	8,175
Parkdale	1305 Queen St. W	24,083
Parliament	269 Gerrard St. E	14,634
Perth Dupont	1589 Dupont St.	3,627
Pleasant View	575 Van Horne Ave.	7,000
Rexdale	2243 Kipling Ave.	5,088
Richview	1806 Islington Ave.	47,252
Riverdale	370 Broadview Ave.	9,658
Runnymede	2178 Bloor St. W	12,034
S Walter Stewart	170 Memorial Park Dr.	25,847

Location Name	Address	Floor Area (ft^2)
Sanderson	327 Bathurst St.	12,702
Scarborough Civic Centre****	156 Borough Dr.	14,500
Spadina Road	10 Spadina Rd.	3,952
St Clair Silverthorn	1748 St. Clair Ave. W	4,587
St Lawrence	171 Front St. E	4,833
Steeles*	375 Bamburgh Cir.	5,509
Taylor Memorial	1440 Kingston Rd.	5,000
Thorncliffe	48 Thorncliffe Park Dr.	11,034
Toronto Reference Library	789 Yonge St.	426,535
Victoria Village	184 Sloane Ave.	5,383
Weston	2 King St.	11,944
Woodside Square	1571 Sandhurst Cir.	9,792
Woodview Park	16-18 Bradstock Rd.	6,658
Wychwood	1431 Bathurst St.	6,381
York Woods	1785 Finch Ave. W	42,176
Yorkville	22 Yorkville Ave.	9,053

*Increase in floor area size between 2014-2018
**Location added to building portfolio in 2014
***Location added to building portfolio in 2017
****Location added to building portfolio in 2016

Most of the reported buildings are library branches, but administrative offices and storage locations are also included.

These locations are managed by the Toronto Public Library and they represent the largest library system in Canada and the busiest urban public library system in the world. As of 2017, the TPL's collection consisted of over 10.6 million items including books, CDs, DVDs, and eBooks, which were collectively borrowed over 30.1 million times. Aside from its lending collection, the TPL hosts programs and classes throughout the year in a variety of areas including, but not limited to:

- Author talks and lectures
- Book clubs and writers groups
- Career counseling and job searches
- Computer training courses
- ESL and newcomer programs
- Health and wellness classes
- Personal finance classes
- Adult literacy programs

Further information about TPL locations and services can be found here: Toronto Public Library

18.1.2 Summary of 2018 Energy Use and Costs

All 88 reported locations utilize electricity, but natural gas consumption is not observed at Davenport, Eglinton Square, North York Central Pop-up, Palmerston, and St. Lawrence. At all other locations, natural gas is used for space heating and/or domestic hot water heating. Total electricity, natural gas, and water use and costs are summarized below.

Table 68: 2018 Energy Use and Costs – Public Libraries and Related Facilities

	Use	Rate	ekWh	Cost
Electricity	32,846,417 kWh	0.158/kWh	32,846,417	$5,179,538
Natural Gas	2,290,981 m^3	0.296/m^3	23,692,643	$677,811
Water	121,116 m^3	3.791/m^3		$459,114
Total			56,539,060	$6,316,463

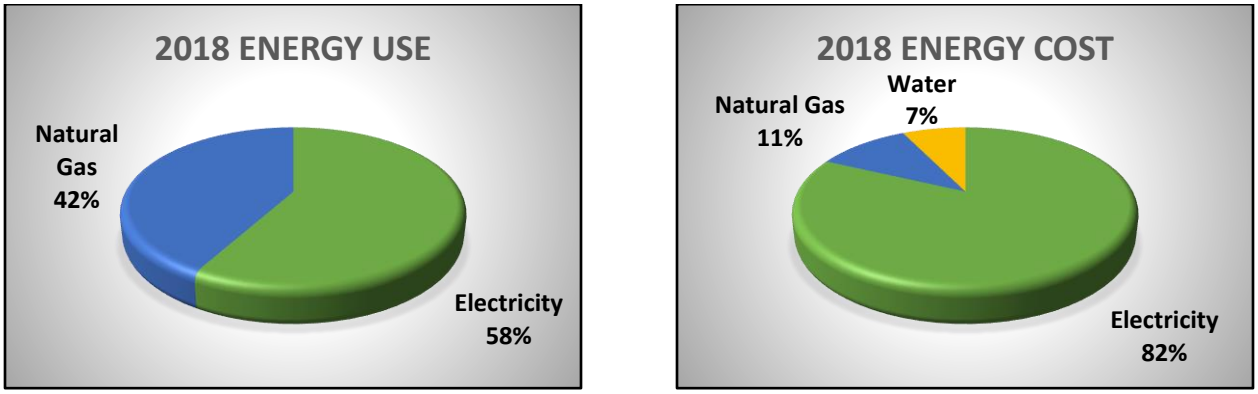


Figure 53: 2018 Energy Use and Costs – Public Libraries and Related Facilities

Note that electricity accounts for 58% of the total energy use, but disproportionally contributes to 82% of overall costs.

Of the 88 locations, 10 consume over 1,000,000 ekWh annually and collectively account for 57% of the overall energy use for public libraries and associated facilities. These locations are as follows: Barbara Frum, East Service Building, Fairview Mall, Lillian H. Smith, North York, North York Centre, Northern District, Richview, Toronto Reference Library, and York Woods.

The Toronto Reference Library itself consumes over 13,000,000 ekWh annually and comprises 23% of the overall energy use for this group.

18.2 Previous Conservation Measures and Results

18.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented 14 energy efficiency projects in public libraries and related facilities.

Table 69: Energy Efficiency Measures (2014-2018) – Public Libraries and Related Facilities

Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical	3	3	$67,000*	Unavailable			
Mechanical	6	6	$1,108,000*	Unavailable			
Structural	3	3	$150,642	Unavailable			
Mechanical/Structural	1	1	$261,126	Unavailable			
Mechanical/Structural/ Electrical	1	1	Unavailable*	Unavailable			

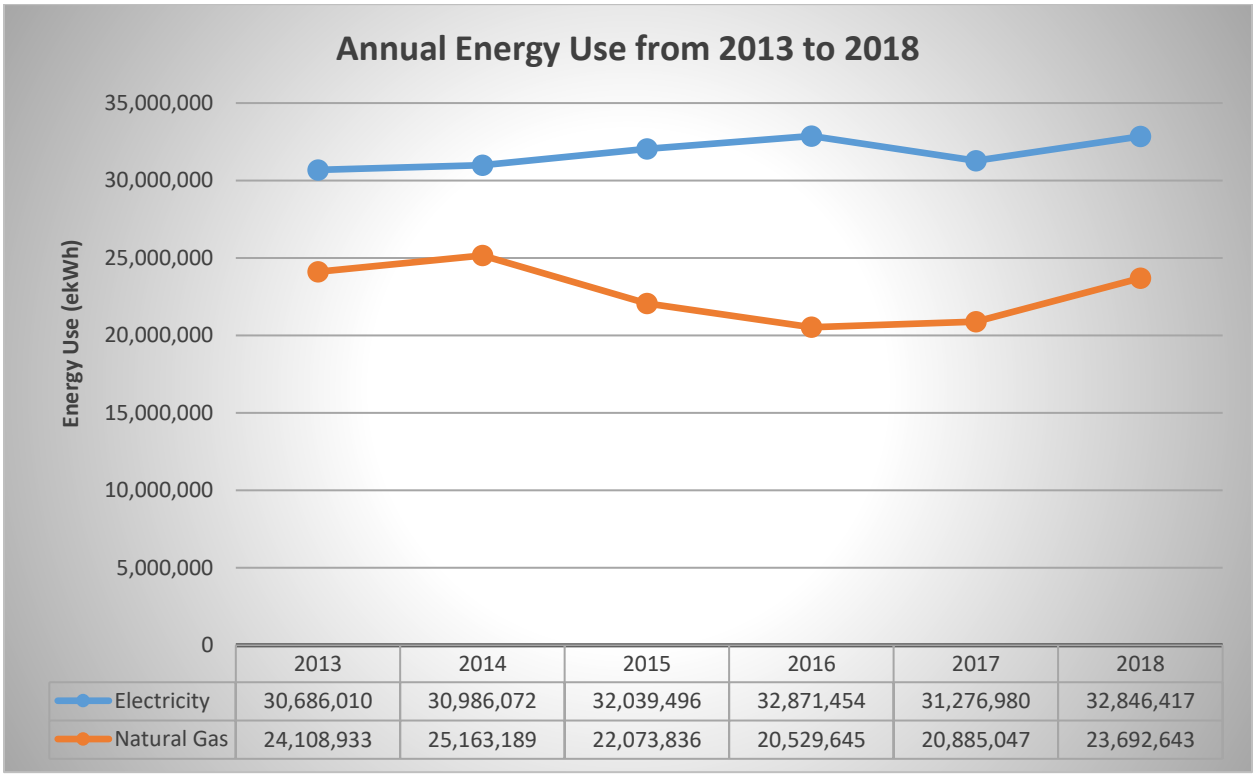
*Total charges not available

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

These projects include LED lighting retrofits at Beaches, Eatonville, and Richview, which should result in substantial reductions in electricity consumption and costs.

Furthermore, boiler and furnace replacements took place at Barbara Frum, Downsview, and Lillian H. Smith, which should have a significant impact on future heating costs at these locations.

18.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	30,686,010	30,986,072	32,039,496	32,871,454	31,276,980	32,846,417
Natural Gas	24,108,933	25,163,189	22,073,836	20,529,645	20,885,047	23,692,643

Figure 54: Actual Energy Use (2013-2018) – Public Libraries and Related Facilities

From 2013 to 2018, the following changes were observed in energy use at City of Toronto public libraries and related facilities:

- **Electricity:** 7% increase
- **Natural gas:** 2% decrease
- **Water:** 3% decrease

Of the 85 locations that were present in the City's portfolio since 2013, 39 demonstrated a reduction in overall energy consumption with an average decrease of 13%. Note that four of these locations increased in square footage between 2014 and 2018, which would have led to increased energy consumption across all utilities.

Due to increased electricity consumption and decreased natural gas consumption between 2013 and 2018, greenhouse gas emissions decreased by 26 tons at these facilities.

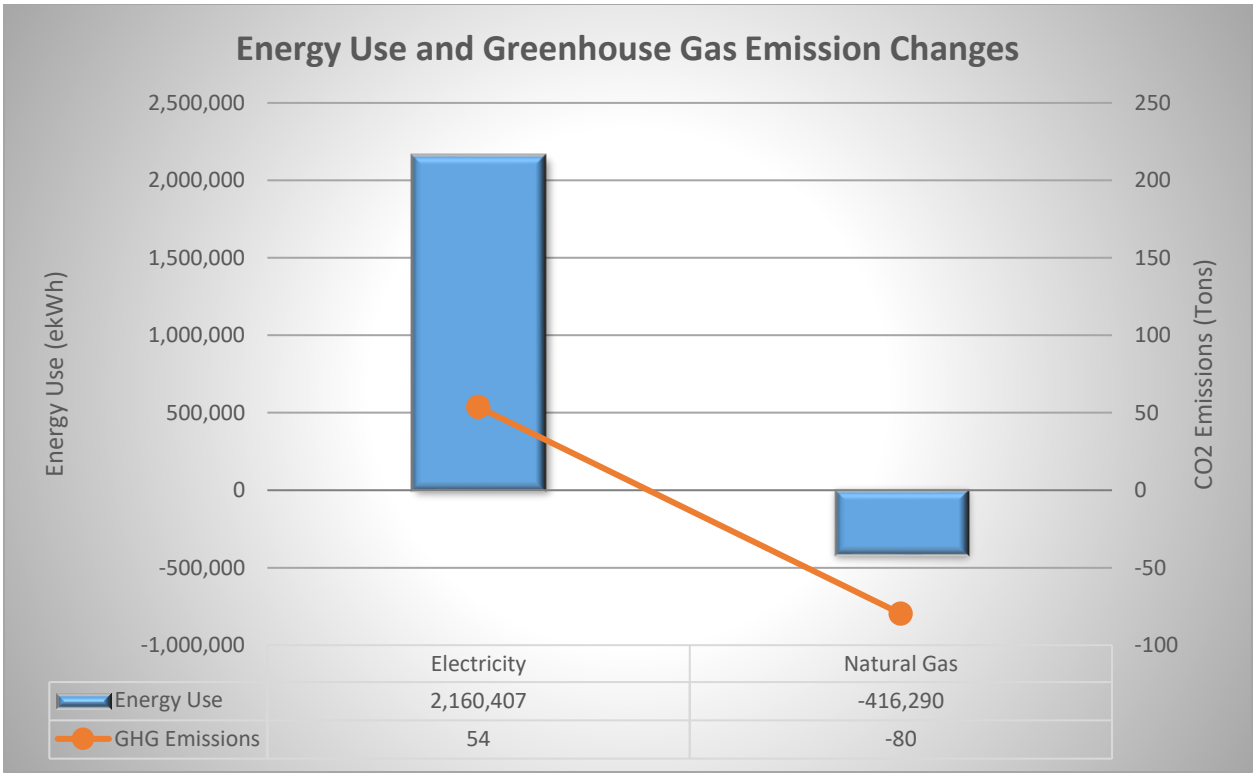


Figure 55: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Public Libraries and Related Facilities

18.3 Proposed Energy Conservation Measures (2019-2024)

Between 2019 and 2024, the Toronto Public Library currently has 10 energy efficiency projects planned to be implemented in public libraries and related facilities.

Table 70: Energy Efficiency Measures (2019-2024) – Public Libraries and Related Facilities

Project Summary			Project Cost	Projected Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Electrical/Mechanical/Structural	10	10	TBD	Unavailable			

Further details about individual measures can be seen in Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Future energy efficiency measures planned in these facilities include boiler/chiller replacements, lighting retrofits, building envelope upgrades, smart system technology installation, and HVAC control upgrades. TPL also has plans to design and construct a new net-zero building that will feature a geo-exchange system combined with a solar PV system.

19. Sewage Treatment Plants

19.1 Energy Use and Building Characteristics

19.1.1 Building Characteristics

The City of Toronto is reporting on four sewage treatment plants with a total area of 880,488 ft^2.

Table 71: City of Toronto Sewage Treatment Plants

Location Name	Address	Floor Area (ft^2)
Highland Creek Treatment Plant	51 Beechgrove Dr.	255,395
Humber Treatment Plant	130 The Queensway	224,869
Main Treatment Plant	1091 Eastern Ave.	378,438
North Toronto Treatment Plant	1101 Millwood Rd.	21,786

Sewage treatment plants are managed by Toronto Water, which collects and treats wastewater (sewage) in Toronto and manages bio-solids (organic material generated by wastewater treatment), including production and disposal.

Toronto's wastewater treatment process operates under strict regulations and meets or exceeds standards set by the provincial and federal government designed to protect public health and the environment.

Further information about these four locations can be found here: City of Toronto - Wastewater Treatment Plants & Reports

19.1.2 Summary of 2018 Energy Use and Costs

Of the four sewage treatment plants described in this report, all currently consume both electricity and natural gas, the latter of which can be utilized for space heating and/or domestic hot water heating. Total electricity, natural gas, and water use and costs are summarized below.

Table 72: 2018 Energy Use and Costs – Sewage Treatment Plants

	Use	Rate	ekWh	Cost
Electricity	218,406,613 kWh	$0.110/kWh	218,406,613	$24,061,632
Natural Gas	16,557,831 m^3	0.262/m^3	171,236,121	$4,334,554
Water	822,395 m^3	$3.751/$m^3$		$3,084,747
Total			389,642,734	$31,480,933

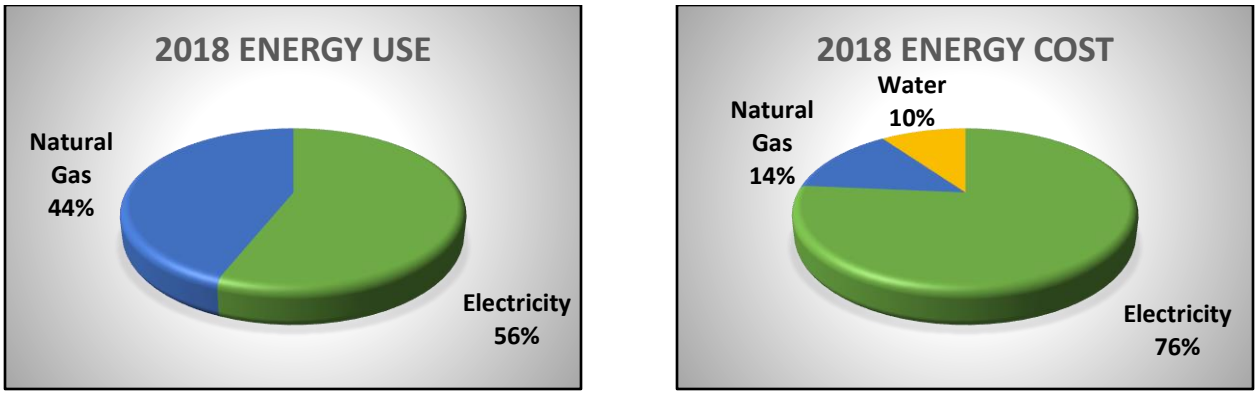


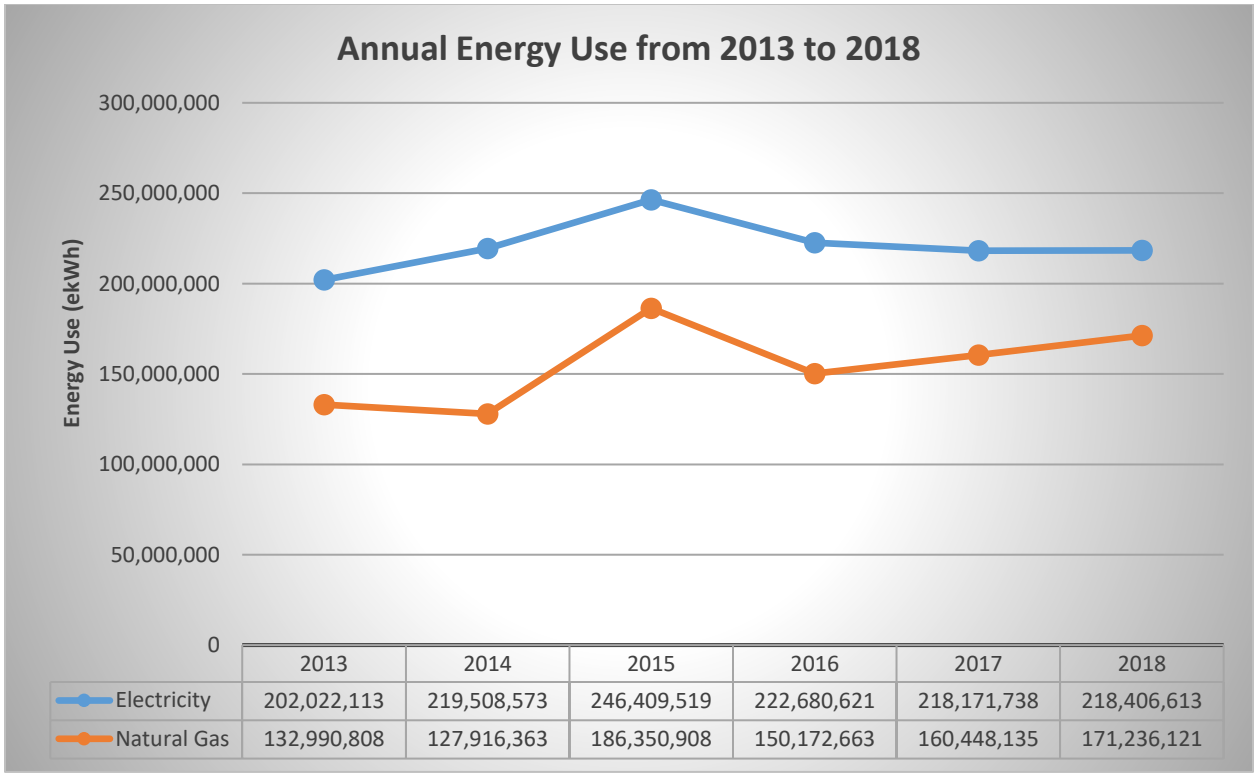
Figure 56: 2018 Energy Use and Costs – Sewage Treatment Plants

Note that electricity contributed to 56% of overall energy use, but comprised 76% of total energy costs.

The Main Treatment Plant consumes over 200,000,000 ekWh of energy annually and comprises 52% of the total energy use for this group.

19.2 Previous Energy Conservation Measures and Results

19.2.1 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	202,022,113	219,508,573	246,409,519	222,680,621	218,171,738	218,406,613
Natural Gas	132,990,808	127,916,363	186,350,908	150,172,663	160,448,135	171,236,121

Figure 57: Actual Energy Use (2013-2018) – Sewage Treatment Plants

From 2013 to 2018, the following changes were observed in energy use at City of Toronto sewage treatment plants:

- **Electricity:** 8% increase
- **Natural gas:** 29% increase
- **Water:** 6% decrease

Overall energy use increased at all four sites, but was most pronounced at the Humber Treatment Plant, which had a 40% increase in natural gas use from 2013 to 2018.

As a result of increased natural gas and electricity consumption between 2013 and 2018, greenhouse gas emissions increased by 7,794 tons at these locations.

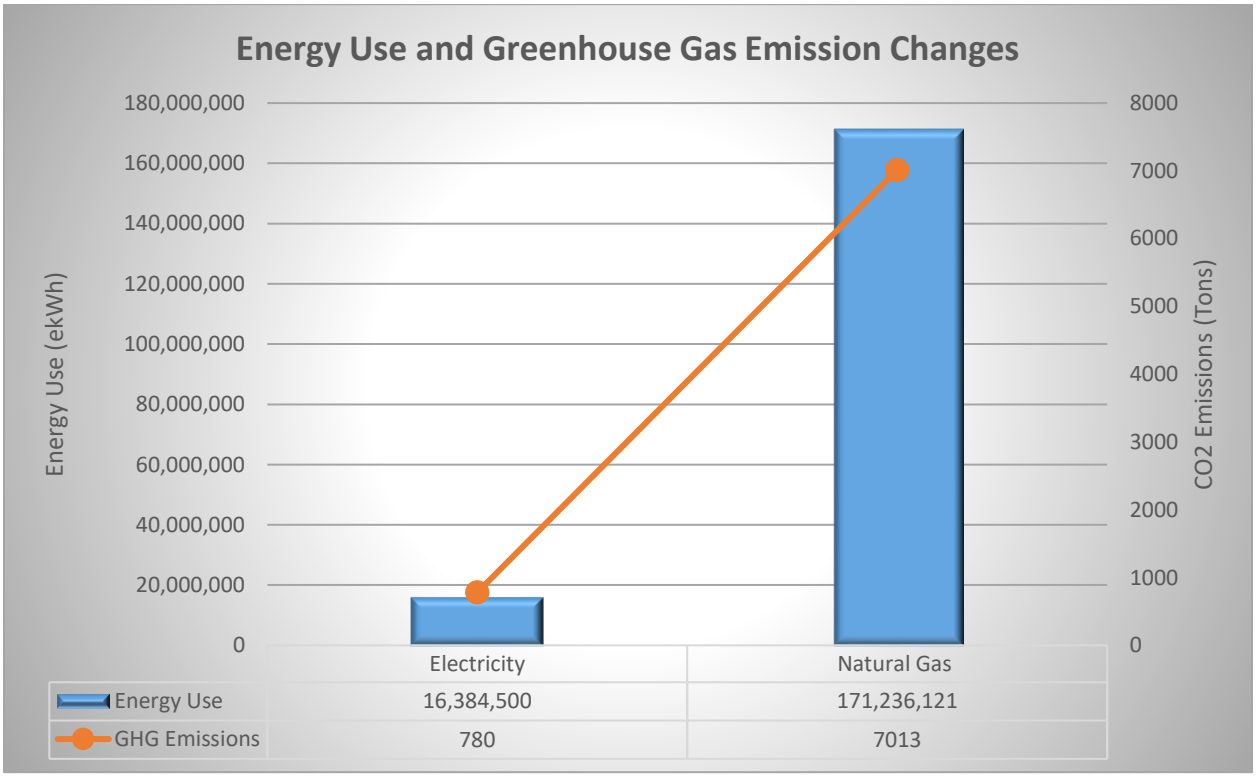


Figure 58: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Sewage Treatment Plants

20. Shelters, Support, and Housing Administration

20.1 Energy Use and Building Characteristics

20.1.1 Building Characteristics

The City of Toronto is reporting on 12 shelters, support, and housing administration (SSHA) locations with a total floor area of 325,255 ft^2.

Table 73: City of Toronto Shelters, Support, and Housing

Location Name	Address	Floor Area (ft^2)
Adelaide Resource Centre for Women	67 Adelaide St. E	15,888
Asquith Green Social Housing	21 Park Rd.	6,329
Assessment & Referral Centre	129 Peter St.	11,780
Birkdale Residence*	1229 Ellesmere Rd.	35,692
Downsview Dell	1651 Sheppard Ave. W	5,199
Family Residence	4222 Kingston Rd.	39,999
Fort York Residence	38 Bathurst St.	25,995
Islington Seniors' Shelter**	2671 Islington Ave.	21,328
Robertson House	291 Sherbourne St.	19,795
Seaton House	339 George St.	97,995
Women's Residence	674 Dundas St. W	28,255
YWCA Women's Shelter**	348 Davenport Rd.	17,000

*Location added to building portfolio in 2017
**Location added to building portfolio in 2018

The 12 reported locations are managed by the Shelters, Support, and Housing Administration division, but note that they represent only a fraction of the shelter and respite services offered by the City of Toronto. Many sites are provider-owned and the responsibility for energy use and management is that of the provider. This report will only describe those locations for which the City is directly responsible for the site's energy use and management.

The City of Toronto has more shelter beds per capita than any other Canadian city and the SSHA currently provides more than 7,000 emergency and transitional shelter beds in 63 locations and through motel programs. Additionally, the SSHA provides the following services to City of Toronto residents:

- Funding and overseeing community agencies to deliver services such as street outreach, winter respite, and housing stability services (ie. Supports to daily living, eviction prevention)
- Managing drop-in centres, which provide a range of services including food, healthcare, showers, laundry, and social and recreational activities

Further information about shelter locations and SSHA services can be found here: City of Toronto - Homeless Help & Other Services

20.1.2 Summary of 2018 Energy Use and Costs

Of the 12 sites described in this report, all currently consume both electricity and natural gas, the latter of which is utilized for space heating and/or domestic hot water heating. Total electricity, natural gas, and water use and costs are summarized below.

Table 74: 2018 Energy Use and Costs – Shelters, Support, and Housing

	Use	Rate	ekWh	Cost
Electricity	5,369,290 kWh	$0.121/kWh	5,369,290	$651,351
Natural Gas	930,233 m^3	0.266/m^3	9,620,191	$247,878
Water	77,871 m^3	$3.776/$m^3$		$294,008
Total			14,989,481	$1,193,237

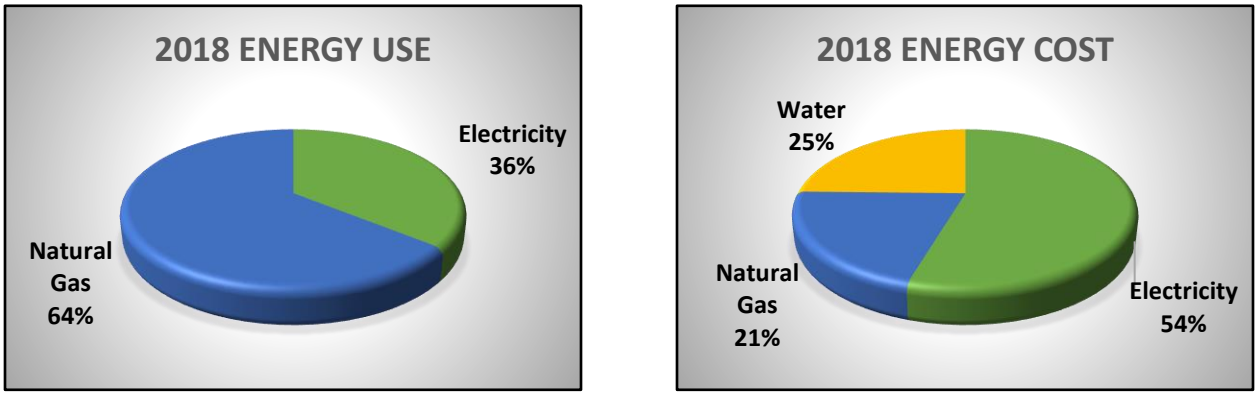


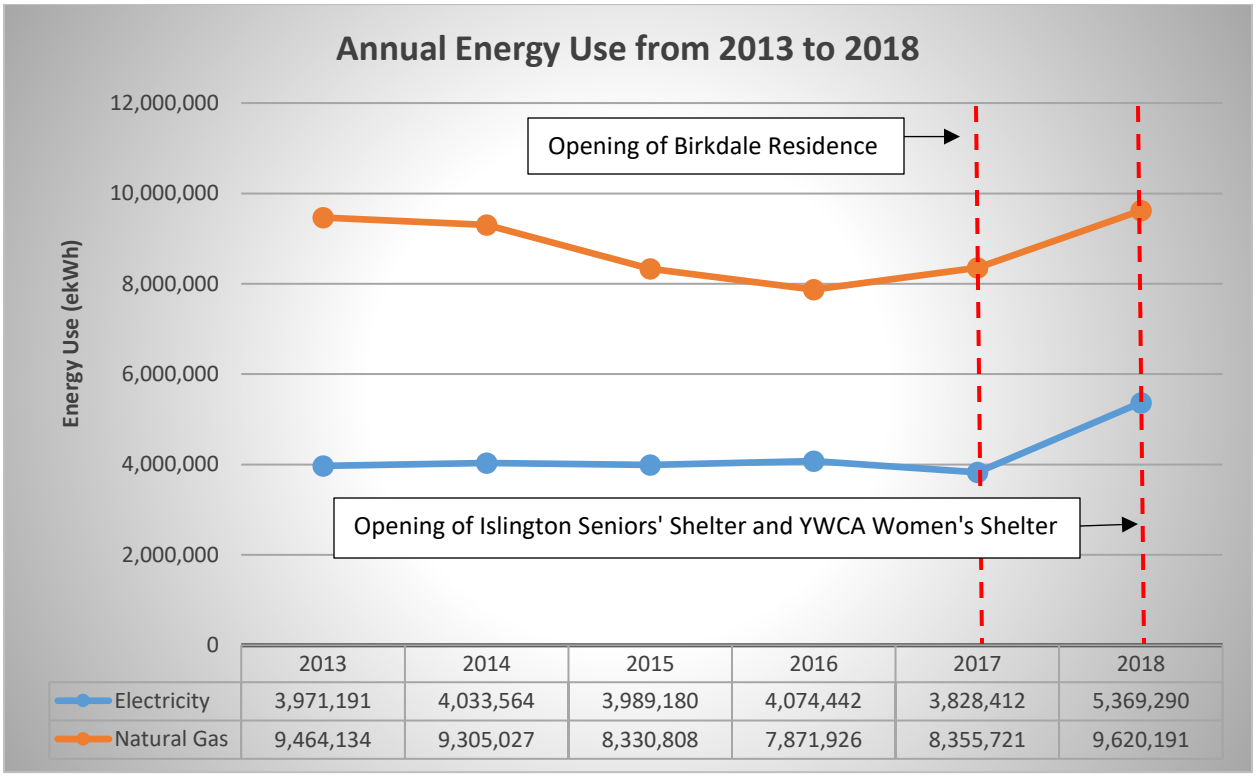
Figure 59: 2018 Energy Use and Costs – Shelters, Support, and Housing

Note that electricity contributed to 36% of overall energy use, but disproportionately accounts for 54% of total energy costs.

Seaton House consumes over 6,000,000 ekWh of energy annually and accounts for 42% of the total energy use for this building group.

20.2 Previous Conservation Measures and Results

20.2.1 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	3,971,191	4,033,564	3,989,180	4,074,442	3,828,412	5,369,290
Natural Gas	9,464,134	9,305,027	8,330,808	7,871,926	8,355,721	9,620,191

Figure 60: Actual Energy Use (2013-2018) – Shelters, Support, and Housing

From 2013 to 2018, the following changes were observed in energy use at City of Toronto SSHA locations:

- **Electricity:** 35% increase
- **Natural gas:** Less than 1% increase
- **Water:** 35% decrease

Of the nine locations open in 2013, five demonstrated a reduction in overall energy consumption with an average decrease of 10%.

As a result of increased natural gas and electricity consumption between 2013 and 2018, greenhouse gas emissions increased by 48 tons at these locations.

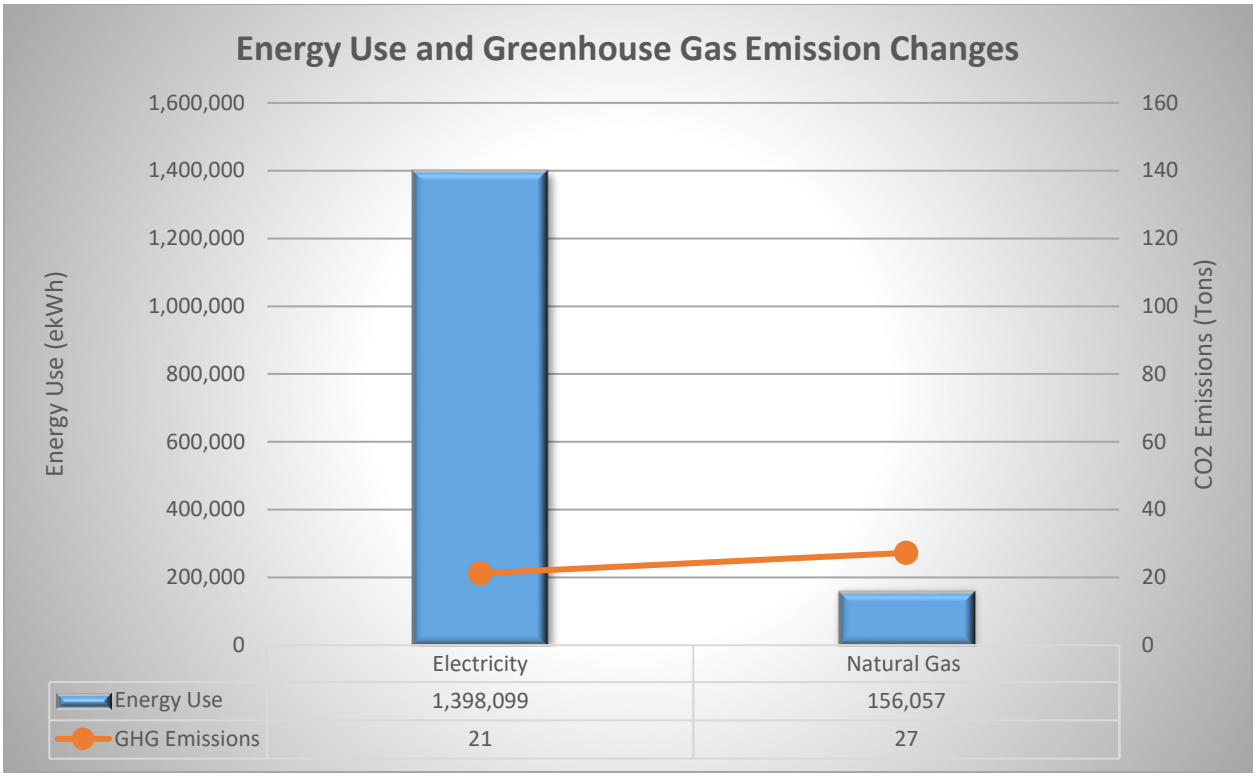


Figure 61: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Shelters, Support, and Housing

20.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City of Toronto currently has the following work planned in SSHA locations:

- 3306 Kingston Road:
  - Added to building portfolio in 2019 and includes energy efficient technologies and a geo-exchange system. For further information on geo-exchange systems, see 2.4 Geo-exchange.
- 2299 Dundas Street and 705 Progress Road
  - Added to building portfolio in 2019.
  - Major construction is scheduled to begin in late 2019 and will include energy efficiency measures.
- 348 Davenport Road and 2671 Islington Avenue
  - Added to building portfolio in 2018.
  - Renovation began in 2018 and will continue into 2019. Energy efficiency measures will be included in building design.
- 69 Fraser Avenue, 351 Lakeshore Boulevard East, 701 Fleet Street
  - Energy efficiency data at these temporary sites will be included in the next ECDM update as they are new to the SSHA portfolio.

21. Storage Facilities

21.1 Energy Use and Building Characteristics

21.1.1 Building Characteristics

The City of Toronto is reporting on 79 storage facilities with a total indoor area of 4,669,588 ft^2. Note that some of these sites have extensive outdoor space, which is not included in the floor areas listed or the energy analysis presented.

Table 75: City of Toronto Storage Facilities

Location Name	Address	Floor Area (ft^2)
1627 Danforth Ave	1627 Danforth Ave.	62,834
64 Murray Rd.	64 Murray Rd.	38,760
700 Arrow Rd	700 Arrow Rd.	230,000
Alliance Overhead Shop*	391 Alliance Ave.	34,952
Alness Service Yard	21 Alness St.	25,715
Bartonville Park	5 Bartonville Ave. E	3,606
Bentworth Park Yard - Building 1	140 Bentworth Ave.	5,554
Bentworth Park Yard - Building 2	140 Bentworth Ave.	6,330
Bering Yard- Admin/Employee's Building	320 Bering Ave.	9,698
Bering Yard- Maintenance Building	320 Bering Ave.	13,401
Bering Yard- Stores and Warehouse	320 Bering Ave.	4,596
Bering Yard- Truck Shelter	320 & 330 Bering Ave.	8,633
Bering Yard- Utilities Building	320 Bering Ave.	7,589
Bering Yard- Works Storage	320 Bering Ave.	9,881
Birchmount Bus Garage	400 Danforth Rd.	150,996
Birchmount Parks Yard	101 Ridgetop Rd.	15,317
Brimley Parks Yard	451 Brimley Rd.	2,809
Caledonia Rd Service Yard	1141 Caledonia Rd.	1,981
Castlefield Yard	1401 Castlefield Ave.	36,447
Centennial Park Svc Building	149 Elmcrest Rd.	1,023
Central Equipment Yard	1026 Finch Ave. W	148,198
Central Water Services	545 Commissioners St.	32,679
Davisville Garage & Shop	1900 Yonge St.	120,450
Disco Yard**	150 Disco Rd.	10,570
Disco Yard Office Building	156 Disco Rd.	37,975
Disco Yard Building A- Employee Building	150 Disco Rd, Building 100	7,998
Disco Yard Building B- South Garage	150 Disco Rd, Building 102	28,029
Disco Yard Building C- Vehicle Maintenance	150 Disco Rd, Building 101	22,959
Disco Yard Building D- North Garage	150 Disco Rd, Building 103	24,445
Dufferin Maintenance Yard	75 Vanley Cres.	31,667
Eastern & Booth Blocks	433 Eastern Ave.	236,645

Location Name	Address	Floor Area (ft^2)
Eastern Ave Yard / Office	843 Eastern Ave.	84,701
Eastern Ave Yard / Shop	875 Eastern Ave.	9,698
Eglinton Flats Service Building	101 Emmett Ave.	5,705
Eglinton Garage	38 Comstock Rd.	120,986
Ellesmere Yard	1050 Ellesmere Rd.	138,069
Emery Parks Yard	27 Toryork Dr.	18,998
Emery Works Yard	61 Toryork Dr.	26,404
Hamilton Street Yard	138 Hamilton St.	2,756
Health Materials Warehouse	160 Rivalda Rd.	22,604
Hillcrest, Gunn, Bathurst Garage	1138 Bathurst St.	295,000
Ingram Works Yard	86 Ingram Dr.	23,907
Joel Weeks Park - Storage Building**	10 Thompson St.	183
King St Garage	1116 King St. W	83,485
Kipling Maintenance Yard	441 Kipling Ave.	27,373
Kipling Yard	435 Kipling Ave.	11,001
Lakeshore Garage & Shop	580 Commissioners St.	305,356
Leslie Barns*	1165 Lakeshore Blvd. E	279,862
Maintenance Yard #3	195 Berdmondsy Rd.	4,618
Maintenance Yard #6	7 Leslie St.	6,135
Malvern Garage & Shop	5050 Sheppard Ave. E	574,125
Marylin Bell Park Water Equipment Shed	1155 Lake Shore Blvd. W	700
McDairmid Woods	1904 Brimley Rd.	301
Monarch Park Service Yard	115 Felstead Ave.	13,950
Morningside Yard	891 Morningside Ave.	14,779
Mt. Dennis Bus Garage	121 Industry St.	710,493
Nashdene Yard	70 Nashdene Rd.	301
Nashdene Yard	70 Nashdene Rd.	24,176
North East District Salt Dome**	1 Nantucket Blvd.	9,526
Northern Services Building	4801 Dufferin St.	5,769
Northline Parks and Garage	30 Northline Rd.	50,041
Old Eglinton Yard	25 Old Eglinton Ave.	66,155
Oriole Parks Yard	2747 Old Leslie St.	13,046
Oriole Yard- Signs and Markings	2755 Old Leslie St.	16,264
Oriole Yard- Works	2751 Old Leslie St.	26,759
Pharmacy Yard	135 Pharmacy Ave.	1,851
Property Operation Workshop	133 River St.	12,034
Queensway Garage & Shop	400 Evans Ave.	123,426
Ramsden Yard	1008 Yonge St.	20,247
Rockcliffe Yard	301 Rockcliffe Blvd.	14,047
Sixth St Garage	297 Sixth St.	6,997

Location Name	Address	Floor Area (ft^2)
Temp Harvey Shop***	793 Davenport Rd.	Unavailable
Toronto Island Service Yard	0 Centre Isld	34,724
Train Storage Building	20 Centre Rd.	30,849
Wellington Yard & Office	677 Wellington St. W	2,164
Wellington Yard & Storage	677 Wellington St. W	21,269
Whitlam Warehouse	25 Whitlam Ave.	24,865
Winter Maintenance Depot	8270 Sheppard Ave. E	12,152

*Location added to building portfolio in 2016
**Location added to building portfolio in 2014
***Location added to building portfolio in 2017

The buildings in this group are managed by a variety of City of Toronto divisions and agencies including: Facilities Management, Parks, Forestry, & Recreation, Solid Waste Management, Toronto Transit Commission, Toronto Water, and Toronto Parking Authority. These locations are primarily used for storage, but may also include administrative space.

21.1.2 Summary of 2018 Energy Use and Costs

Of the 79 storage buildings described in this report, 65 currently consume both electricity and natural gas, the latter of which is utilized for space heating and/or domestic hot water heating. Locations without natural gas consumption include: Caledonia Road Service Yard, Disco Yard, Disco Yard Office Building, Hamilton Street Yard, Joel Weeks Park – Storage Building, Marylin Bell Park Water Equipment Shed, McDairmid Woods, Monarch Park Service Yard, North East District Salt Dome, Oriole Parks Yard, Temp Harvey Shop, Toronto Island Service Yard, and Wellington Yard & Office. It is important to note that many of the buildings described in this group are located within service yards with multiple buildings. Therefore, some of these buildings may actually consume natural gas that is officially registered to a nearby location.

Total electricity, natural gas, and water use and costs are summarized below.

Table 76: 2018 Energy Use and Costs – Storage Facilities

	Use	Rate	ekWh	Cost
Electricity	62,811,946 kWh	$0.148kWh	62,811,946	$9,272,553
Natural Gas	14,339,674 m^3	0.352/m^3	148,296,609	$5,049,071
Water	92,256 m^3	$3.803/$m^3$		$350,840
Total			211,108,555	$14,672,464

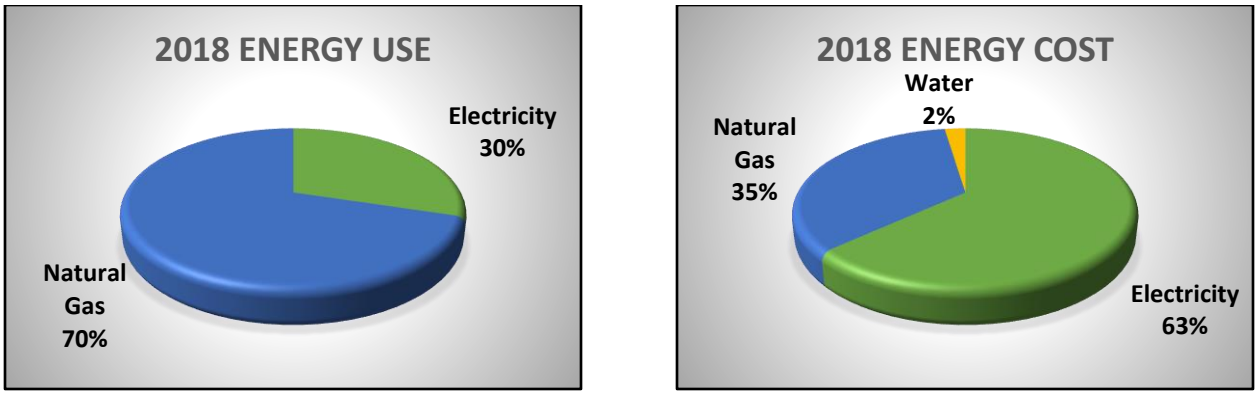


Figure 62: 2018 Energy Use and Costs – Storage Facilities

Note that electricity accounts for only 30% of total energy use, but 63% of total energy costs for this building group.

The six largest energy consumers in this group each consume over 15,000,000 ekWh of energy annually and collectively comprise 61% of the total energy use for this group. These buildings are as follows: Hillcrest, Gunn, and Bathurst Garages, Mt. Dennis Bus Garage, Leslie Barns, 700 Arrow Road, Birchmount Bus Garage, and Queensway Garage & Shop. All of these locations are managed by the TTC.

21.2 Previous Conservation Measures and Results

21.2.1 Previous Energy Efficiency Measures (2014-2018)

Between 2014 and 2018, the City of Toronto implemented five energy efficiency projects in storage facilities.

Table 77: Energy Efficiency Measures (2014-2018) – Storage Facilities

Project Summary			Project Cost	Estimated Annual Utility Savings			
Project Type	Number of Projects	Number of Buildings	Total Cost	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost Savings
Structural	5	5	$1,755,996*	Unavailable			

*Total project cost includes charges for non-energy efficiency measures

For a detailed description of individual measures, see Appendix B: City of Toronto Energy Efficiency Measures (2014-2018).

Previous energy efficiency measures included roof replacements at Disco Yard, Birchmount Parks Yard, Nashdene Yard, and Rockcliffe Yard. This work should have a direct impact on heating and cooling costs at these sites.

21.2.2 Summary of 2013-2018 Energy Use

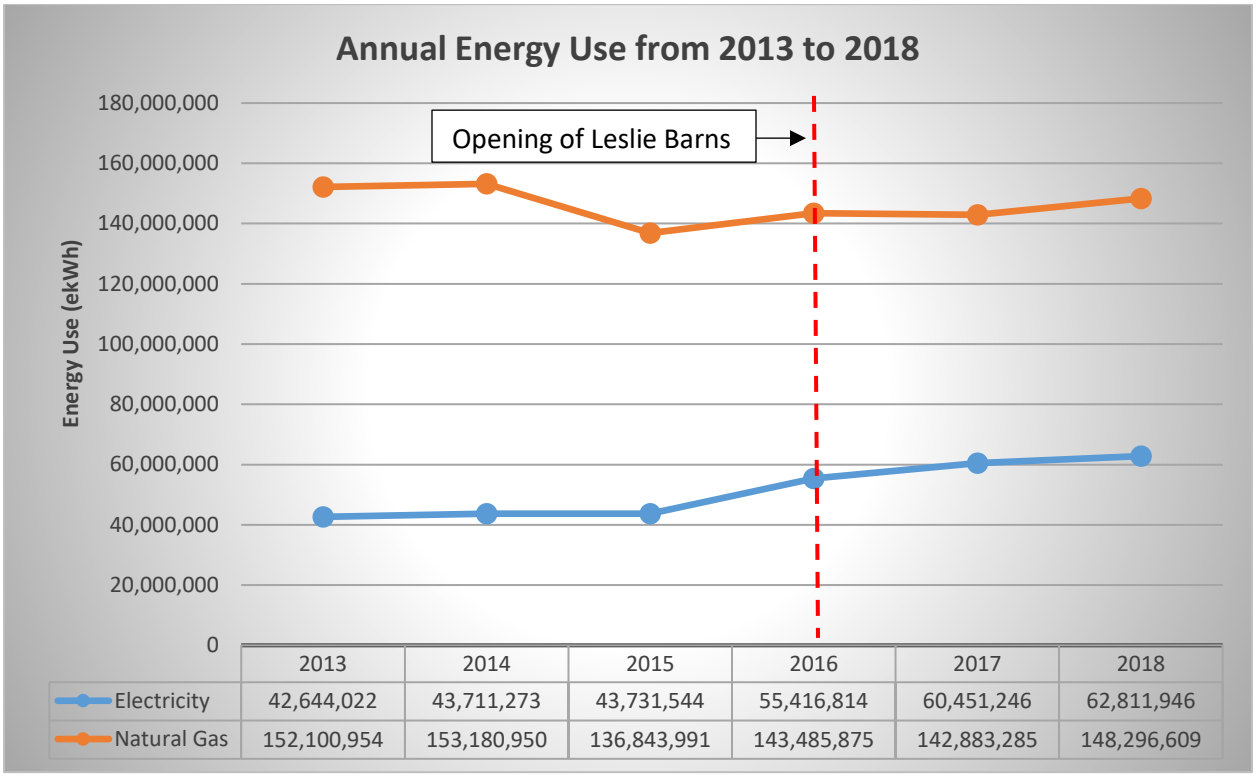


Figure 63: Actual Energy Use (2013-2018) – Storage Facilities

From 2013 to 2018, the following changes were observed in energy use at City of Toronto storage facilities:

- **Electricity:** 47% increase
- **Natural gas:** 3% decrease
- **Water:** 19% increase

Note that the overall electricity increase is mainly attributable to the opening of Leslie Barns in 2016. In 2018, this location accounted for 19% of overall the electricity consumption for this building group.

Of the 73 buildings present in the City's portfolio in 2013, 41 demonstrated a reduction in overall energy consumption with an average decrease of 15%.

As a result of decreased natural gas and increased electricity consumption between 2013 and 2018, greenhouse gas emissions decreased by 96 tons in these facilities.

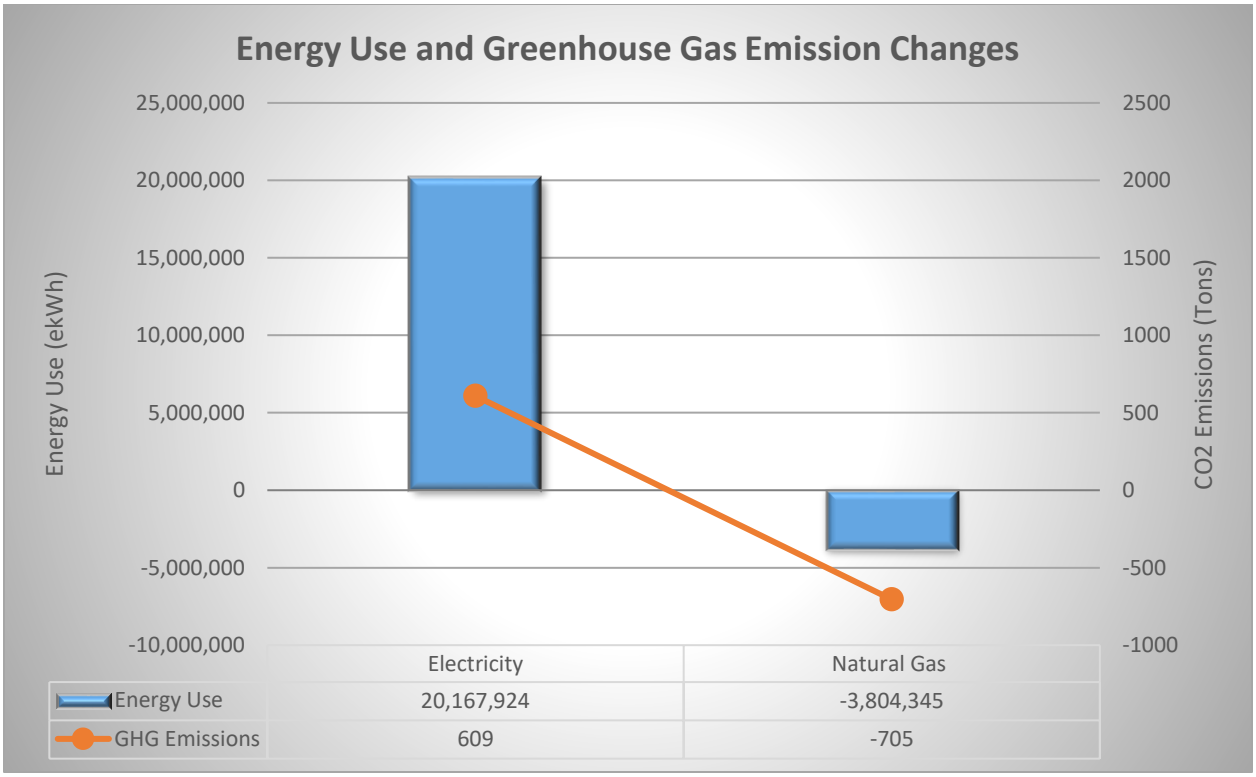


Figure 64: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Storage Facilities

21.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Between 2019 and 2024, the City of Toronto currently has 18 projects planned for implementation in storage facilities.

Table 78: Energy Efficiency Measures (2019-2024) – Storage Facilities

Project Summary			Project Cost	Projected Annual Utility Savings			
Project Type	**Number of Projects**	**Number of Buildings**	**Total Cost**	**Electricity (kWh)**	**Natural Gas (m^3)**	**Water (m^3)**	**Cost Savings**
Electrical	2	2	$757,821	Unavailable			
Mechanical	10	9	$1,766,787	48,000	N/A	N/A	$7,056
Structural	4	4	$1,570,087*	Unavailable			
Electrical/Mechanical	1	1	TBD	Unavailable			
Mechanical/Structural	1	1	TBD	Unavailable			

*Total project costs are currently unavailable for certain measures

For details about specific measures, see Appendix C: City of Toronto Energy Efficiency Measures (2019-2024).

Of the 79 storage facilities, energy efficiency measures are planned in 17 locations and multiple measures, or "deep retrofits", are planned at Disco Yard (Building 101), Eastern & Booth Blocks, and Eastern Ave Yard/Office.

22. Transfer Stations

22.1 Energy Use and Building Characteristics

22.1.1 Building Characteristics

The City of Toronto is reporting on seven transfer stations with a total area of 595,394 ft^2.

Table 79: City of Toronto Transfer Stations

Location Name	Address	Floor Area (ft^2)
Bermondsey Transfer Station	188 Bermondsey Dr.	48,976
Commissioners St Transfer Station	400 Commissioners St.	76,424
Disco Road Transfer Station	120 Disco Rd.	57,049
Dufferin Transfer Station	35 Vanley Cres.	120,663
Ingram Drive Transfer Station	50 Ingram Dr.	112,268
Scarborough Transfer Station	1850 Markham Rd.	96,595
Victoria Park Transfer Station	3350 Victoria Park Ave.	83,959

These transfer stations are managed by the Solid Waste Management Services division and act as drop-off depots to collect, sort, and transfer waste collected in Toronto. Residents can also use these depots to dispose of their unwanted items and waste.

Further information about these transfer stations and the services they provide can be found here: City of Toronto - Drop-Off Depots

22.1.2 Summary of 2018 Energy Use and Costs

All seven transfer stations described in this report currently consume both electricity and natural gas, the latter of which is utilized for space heating and/or domestic hot water heating. Total electricity, natural gas, and water use and costs are summarized below.

Table 80: 2018 Energy Use and Costs – Transfer Stations

	Use	Rate	ekWh	Cost
Electricity	18,207,582 kWh	$0.135kWh	18,207,582	$2,466,909
Natural Gas	573,761 m^3	0.264/m^3	5,933,664	$151,500
Water	23,683 m^3	$3.787/$m^3$		$89,693
Total			24,141,246	$2,708,102

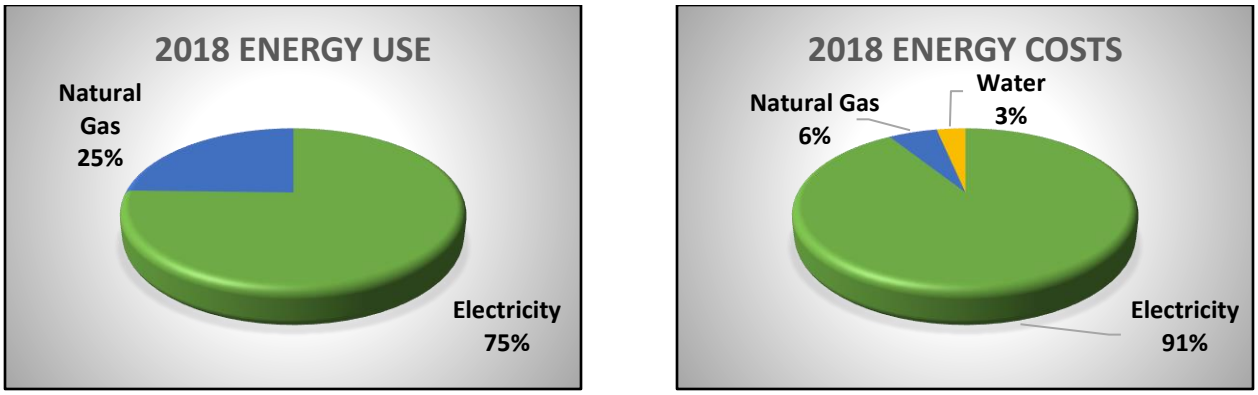


Figure 65: 2018 Energy Use and Costs – Transfer Stations

Note that electricity contributes to 75% of overall energy use, but disproportionately accounts for 91% of total costs.

The Disco Road Transfer Station consumes over 9,000,000 ekWh of energy annually and contributes to 39% of the total energy use for this building group.

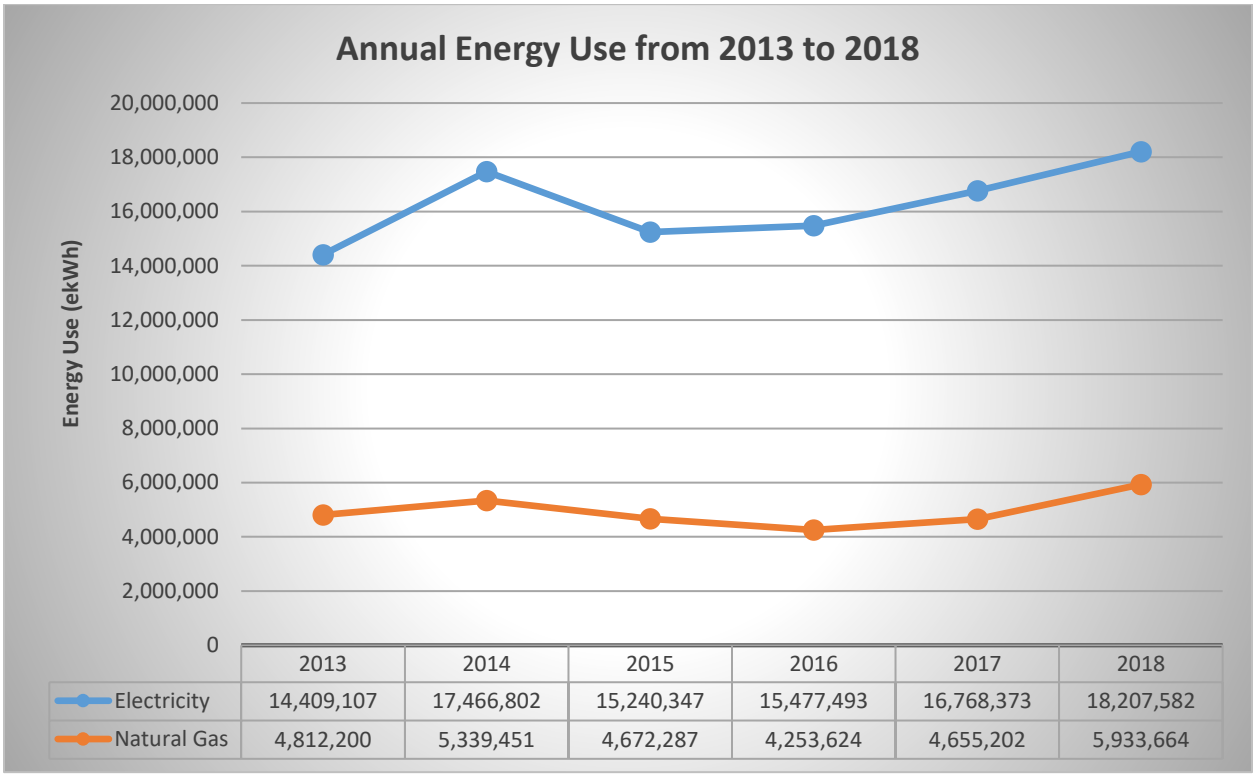
22.2 Previous Energy Conservation Measures and Results

22.2.1 Previous Energy Efficiency Measures (2014-2018)

In 2014 and 2015, Solid Waste Management undertook lighting replacements on the tipping floors of various transfer stations that relate to energy conservation. Notably, the initial lighting on these projects had to be replaced because this relatively new technology was not equipped to handle cold temperatures on the unheated tipping floor.

Although the tipping floor lighting replacement contributes to energy conservation, the primary driver for the project was state-of-good-repair (SOGR) improvements. The tipping floor lighting replacement was specifically required on a health and safety basis to improve visibility for operators. Other SOGR improvements that have been undertaken in the reporting period may contribute to energy conservation by employing improved equipment and/or materials, such as equipment with an Energy Star rating.

22.2.2 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	14,409,107	17,466,802	15,240,347	15,477,493	16,768,373	18,207,582
Natural Gas	4,812,200	5,339,451	4,672,287	4,253,624	4,655,202	5,933,664

Figure 66: Actual Energy Use (2013-2018) – Transfer Stations

From 2013 to 2018, the following changes were observed in energy use at City of Toronto transfer stations:

- **Electricity:** 26% increase
- **Natural gas:** 23% increase
- **Water:** 72% decrease

The energy increases observed in this group were mostly due to changes at the Disco Road Transfer Station, which experienced a 162% increase in energy consumption between 2013 and 2018. This was due to the opening of the Disco Road Organics Processing Facility at this site, which became fully operational in 2014.

Conversely, Commissioners Street Transfer Station and Dufferin Transfer station both experienced overall energy reductions of 8% and 25%, respectively. Note that the consumption decrease at Dufferin Transfer Station was partially due to the closure of the organics processing facility for planned expansion, which should be complete in 2019.

As a result of increased electricity and natural gas consumption between 2013 and 2018, greenhouse gas emissions increased by 304 tons at these locations.

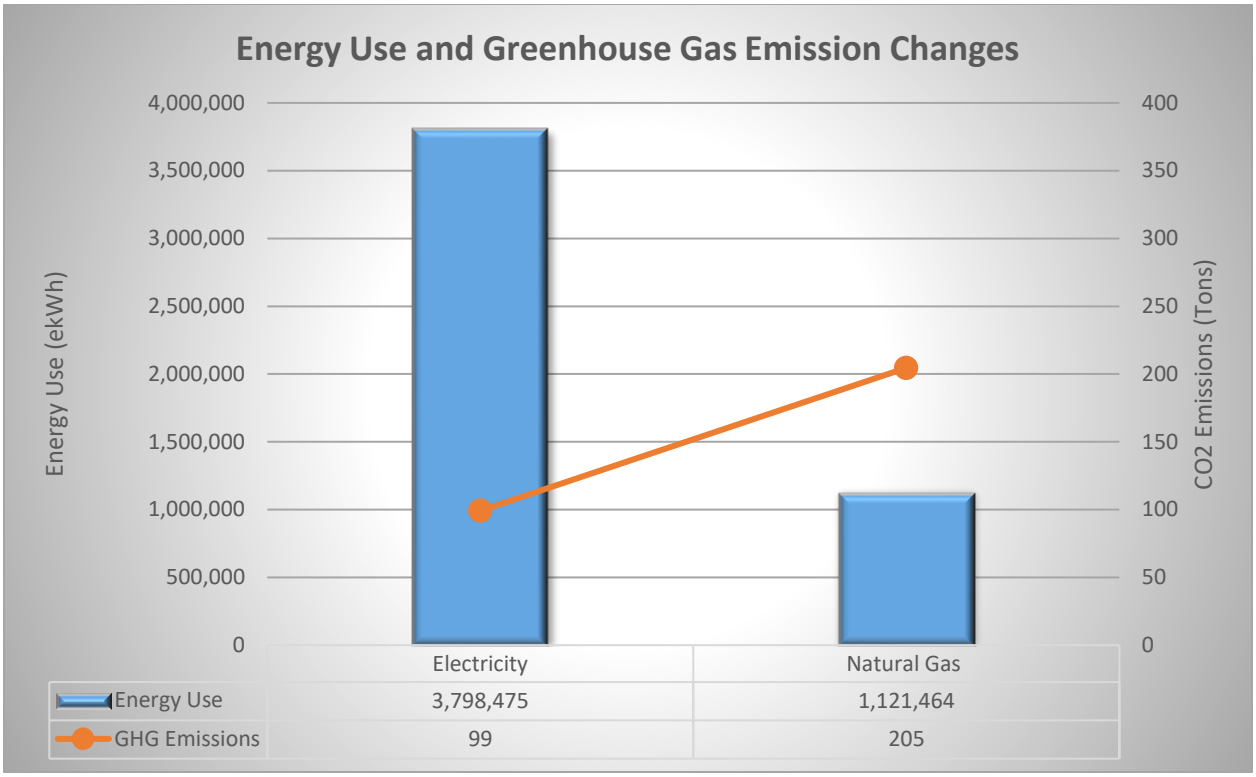


Figure 67: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Transfer Stations

22.3 Proposed Energy Conservation Measures and Initiatives (2019-2024)

Through its Strategic Plan, Solid Waste Management Services has established a vision to be an international leader in the operation of an innovative and sustainable solid waste management utility. The Division's mission is to provide innovative waste management services to residents, businesses, and visitors within the City of Toronto in an efficient, effective, and courteous manner, creating environmental sustainability, promoting diversion, and maintaining a clean city. This vision and mission are guiding principles of the Long Term Waste Management Strategy, which was adopted by Toronto City Council in 2016.

The Strategic Plan establishes Environmental Stewardship as an operational objective for Solid Waste Management Services Division. Similarly, the Long Term Waste Management Strategy focuses on reducing the environmental impact of the waste system and aims for long-term environmental sustainability. The Waste Strategy also identifies recovering energy from waste as a guiding principle and notes energy costs as a key issue to manage moving forward.

With respect to energy retrofits, Solid Waste Management Services does consider energy efficiency and conservation in its capital planning. Process and operational efficiencies and/or State of Good Repair (SOGR) requirements currently supersede energy conservation in investment decisions. Given the industrial nature of Solid Waste Management Services operations, the Division is also sensitive to adopting new technologies that have not yet been proven for industrial purposes. Decisions to invest in these technologies will be made with

consideration of whether a staged roll-out and/or delayed implementation is prudent in the absence of proof-of-concept demonstrations in order to protect the City's investments.

23. Transit Hub

23.1 Energy Use and Building Characteristics

23.1.1 Building Characteristics

The City of Toronto is reporting on one transit hub with a total area of 1,299,836.

Table 81: City of Toronto Transit Hub

Location Name	Address	Floor Area (ft^2)
Union Station	61 Front St. W	1,299,836

Union Station is a National Historic Site of Canada, which houses a railway station, transportation hub, and office space. This location has multiple tenants in addition to the City of Toronto. Note that the listed floor area refers to the area owned by the City, which is the actual station building. The train shed and trackage are owned and managed by Go Transit.

23.1.2 Summary of 2018 Energy Use and Costs

Union Station utilizes steam and chilled water for space heating and cooling, respectively. Total electricity, natural gas, steam, chilled water, and water use and costs are summarized below.

Table 82: 2018 Energy Use and Costs – Transit Hub

	Use	Rate	ekWh	Cost
Electricity	14,804,426 kWh	0.104/kWh	14,804,426	$1,539,440
Natural Gas	405,548 m^3	0.251/m^3	4,194,056	$101,802
Steam	39,449 mlb	37.647/mlb	13,862,661	$1,485,110
Chilled Water	2,358,017 TonHr	0.186/TonHr	8,290,788	$439,119
Water	110,342 m^3	3.984/m^3		$439,648
Total			41,151,931	$4,005,119

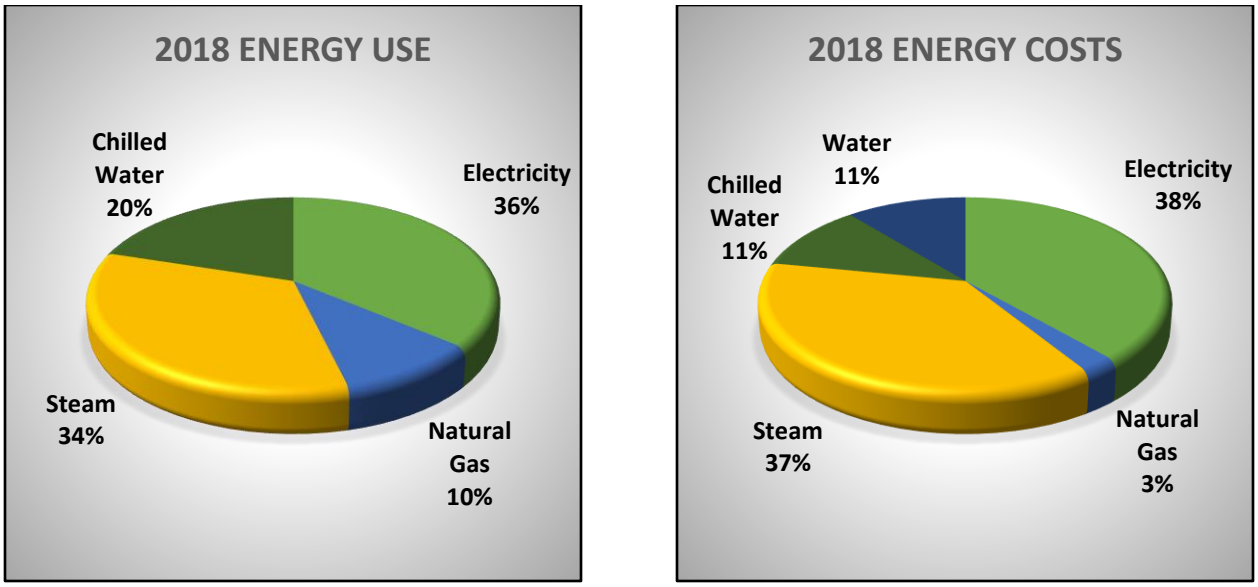
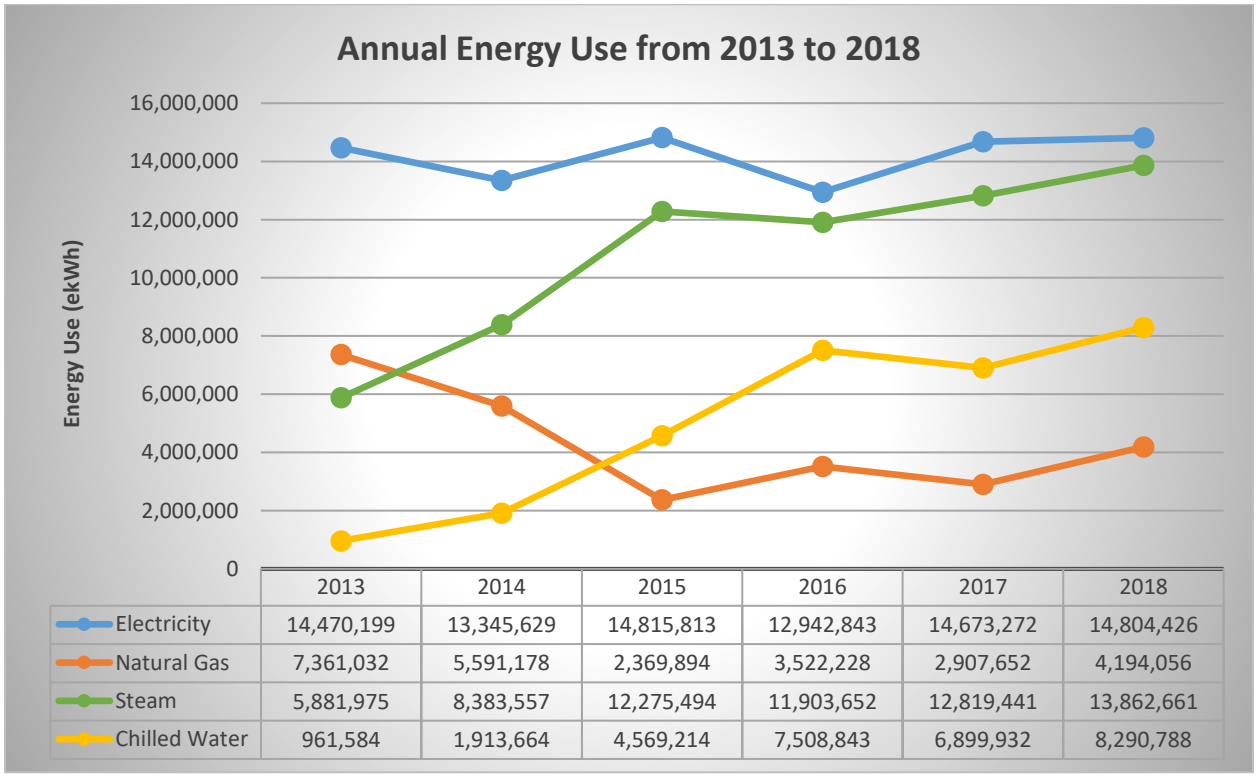


Figure 68: 2018 Energy Use and Costs – Transit Hub

Note that steam and electricity collectively contribute to 70% of total energy use and 75% of overall utility costs.

23.2 Previous Conservation Measures and Results

23.2.1 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	14,470,199	13,345,629	14,815,813	12,942,843	14,673,272	14,804,426
Natural Gas	7,361,032	5,591,178	2,369,894	3,522,228	2,907,652	4,194,056
Steam	5,881,975	8,383,557	12,275,494	11,903,652	12,819,441	13,862,661
Chilled Water	961,584	1,913,664	4,569,214	7,508,843	6,899,932	8,290,788

Figure 69: Actual Energy Use (2013-2018) – Transit Hub

From 2013 to 2018, the following changes were observed in energy use at Union Station:

- **Electricity:** 2% increase
- **Natural gas:** 43% decrease
- **Steam:** 136% increase
- **Chilled water:** 762% increase
- **Water:** 12% increase

As a result of a decrease in natural gas consumption and increases in electricity, chilled water, and steam consumption between 2013 and 2018, greenhouse gas emissions increased by 1,197 tons at Union Station.

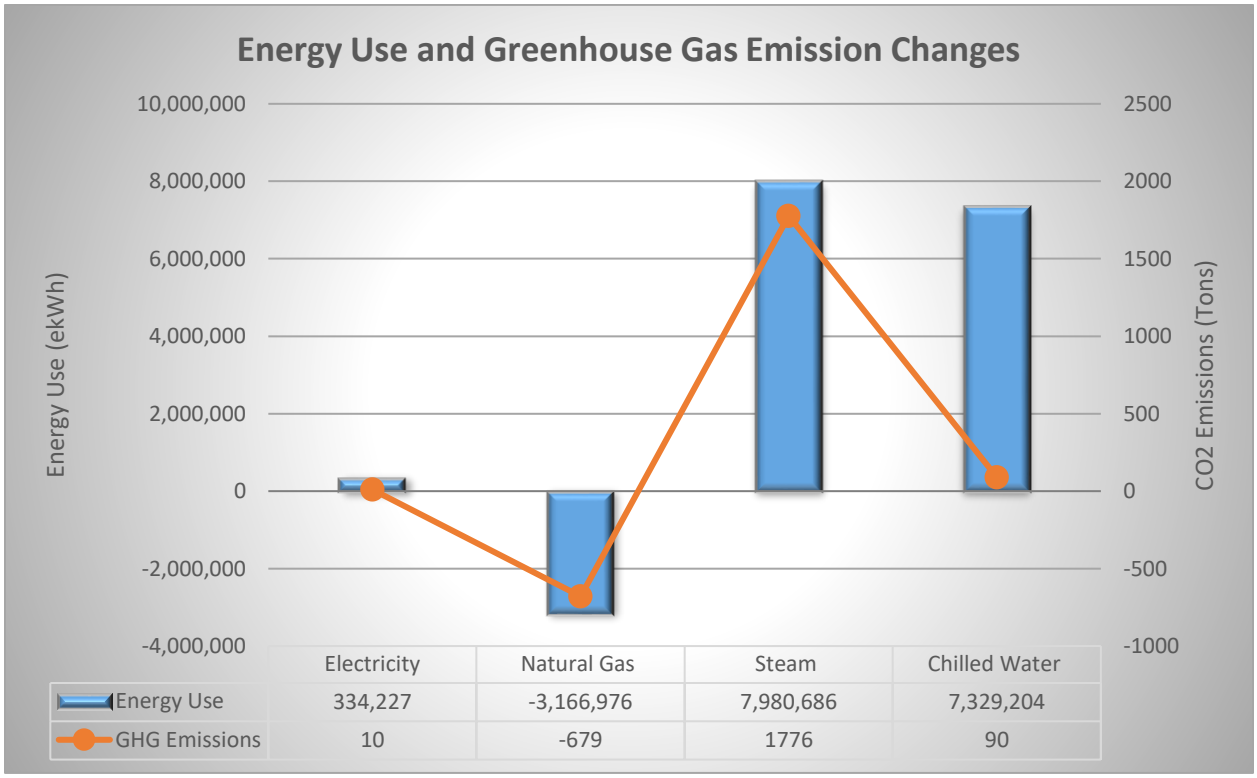


Figure 70: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Transit Hub

24. Water Treatment Plants

24.1 Energy Use and Building Characteristics

24.1.1 Building Characteristics

The City of Toronto is reporting on four water treatment plants with a total area of 906,623 square feet.

Table 83: City of Toronto Water Treatment Plants

Location Name	Address	Floor Area (ft^2)
F.J. Horgan Filtration Plant	201 Copperfield Rd,	325,447
Island Filtration Plant	446 Lakeshore Ave.	64,196
R.C. Harris Filtration Plant	1 Nursewood Rd.	115,368
R.L. Clark Filtration Plant	1-45 Twenty Third St.	401,612

These four water treatment plants are managed by Toronto Water, which is responsible for treating, transmitting, storing, and distributing drinking water to residents and businesses in Toronto.

Each location operates 24/7 and collectively, these plants treat more than 1 billion litres of drinking water every day.

Further information about these four sites and the services offered therein can be found here: City of Toronto - Water Treatment Plants

24.1.2 Summary of 2018 Energy Use and Costs

All four water treatment plants described in this report currently consume both electricity and natural gas, the latter of which is utilized for space heating and/or domestic hot water heating. Total electricity and natural gas use and costs are summarized below.

Table 84: 2018 Energy Use and Costs – Water Treatment Plants

	Use	Rate	ekWh	Cost
Electricity	150,333,802 kWh	$0.102/kWh	150,333,802	$15,288,813
Natural Gas	478,127 m^3	0.274/m^3	4,944,646	$131,092
Total			155,278,448	$15,419,905

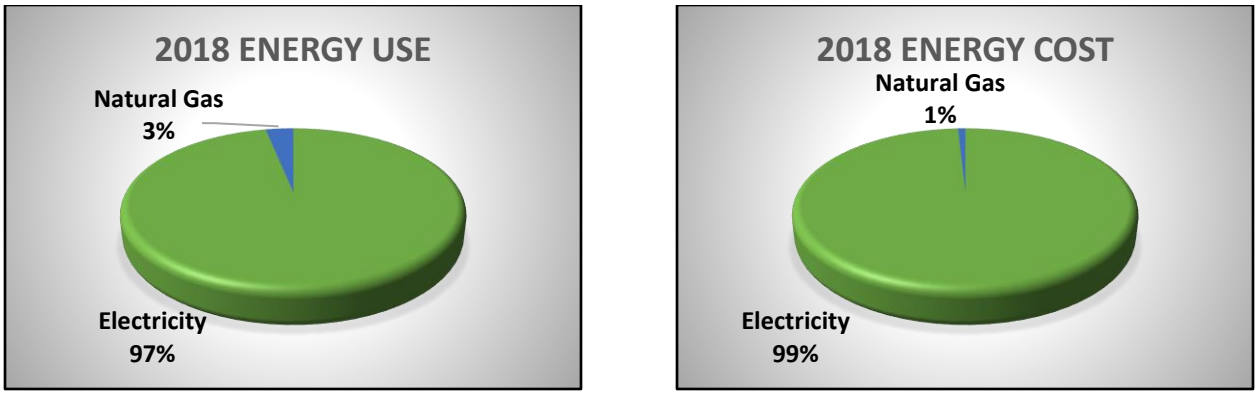
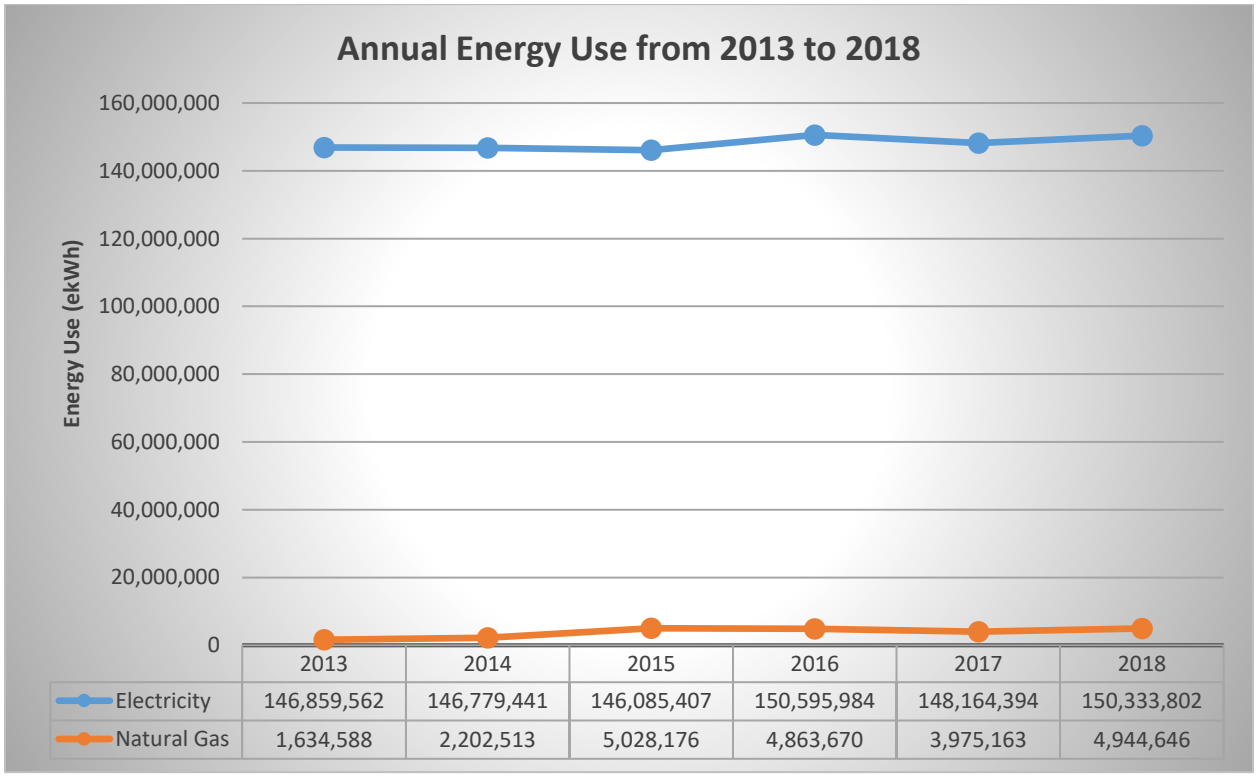


Figure 71: 2018 Energy Use and Costs – Water Treatment Plants

Note that electricity accounts for over 95% of the overall energy use and costs at these sites.

24.2 Previous Energy Conservation Measures and Results

24.2.1 Summary of 2013-2018 Energy Use



	2013	2014	2015	2016	2017	2018
Electricity	146,859,562	146,779,441	146,085,407	150,595,984	148,164,394	150,333,802
Natural Gas	1,634,588	2,202,513	5,028,176	4,863,670	3,975,163	4,944,646

Figure 72: Actual Energy Use (2013-2018) – Water Treatment Plants

From 2013 to 2018, the following changes were observed in energy use at City of Toronto water treatment plants:

- **Electricity:** 2% increase
- **Natural Gas:** 203% increase

Note that this increase in natural gas is mainly due to the implementation of natural gas use in 2014 at the F.J. Horgan Filtration Plant. At all other sites, natural gas experienced a decrease between 2013 and 2018 by an average of 19%.

As a result of increase natural gas and electricity consumption between 2013 and 2018, greenhouse gas emissions increased by 688 tons at these sites.

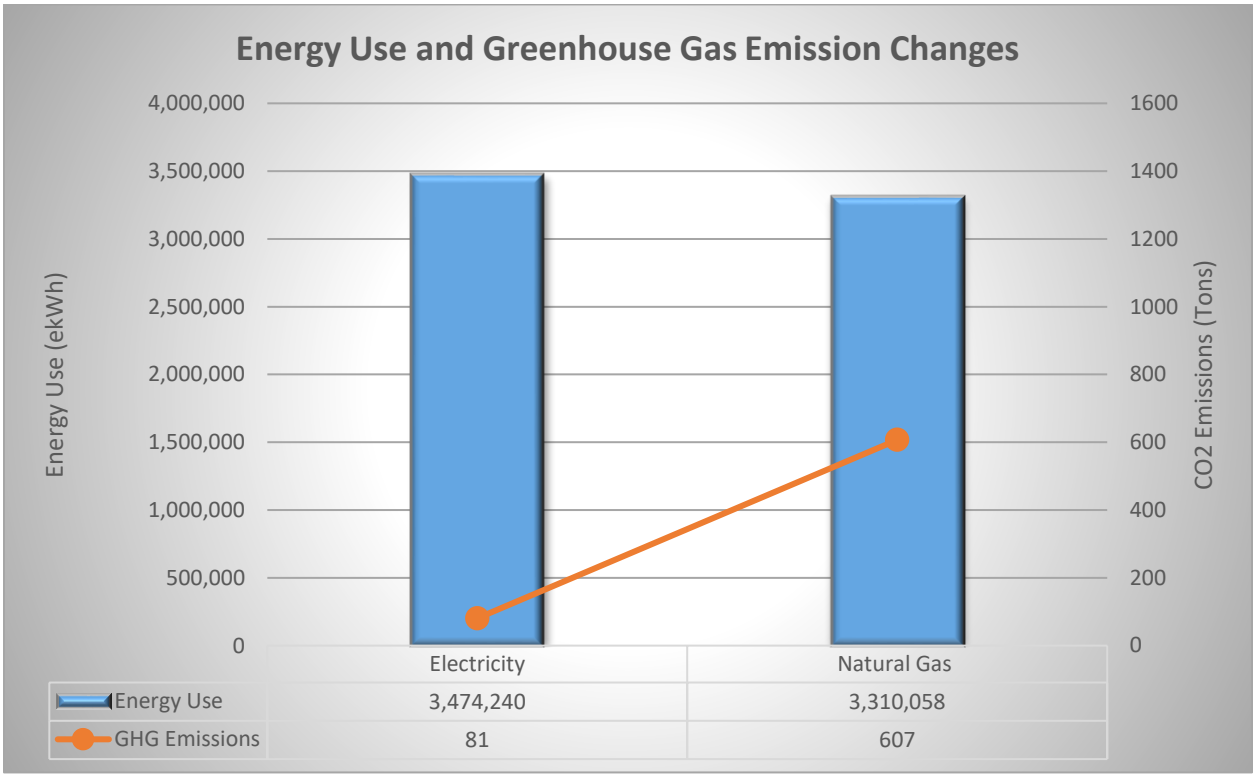


Figure 73: Energy Use and Greenhouse Gas Emission Changes (2013-2018) – Water Treatment Plants

Appendix A: Renewable Energy Generation

Location	Address	Installation Date	System Capacity (kW)	Project Cost	Energy Generated (kWh)					
					2014	2015	2016	2017	2018	Total
#11 Police Division	2054 Davenport Rd.	Nov-15	10	$45,800	0	0	11,374	5,803	4,574	**21,751**
#14 Police Division	350 Dovercourt Rd.	Nov-15	10	$47,000	0	125	13,398	13,069	11,756	**38,348**
2 Church Street Parking	2 Church St.	Jun-12	21	Unavailable	Unavailable	Unavailable	Unavailable	20,533	20,715	**41,248**
Agincourt Arena and Rec Centre	31 Glen Watford Dr.	Feb-13	48	$189,000	42,868	47,551	72,924	63,785	59,309	**286,438**
Albion Arena	1501 Albion Rd.	Jan-18	140	$370,000	0	0	0	0	139,929	**139,929**
Albion Library	1515 Albion Rd.	Jun-18	40	$120,000	0	0	0	0	22,034	**22,034**
Albion Pool & Health Club	1485 Albion Rd.	Nov-17	49.9	$150,000	0	0	0	1,903	62,320	**64,222**
Amesbury Arena	155 Culford Rd.	Feb-16	130	$232,600	0	0	177,266	166,148	164,708	**508,122**
Ancaster Child Care Centre	45 Ancaster Rd.	Aug-17	10	$33,000	0	0	0	0	11,088	**11,088**
Angela James Arena	165 Grenoble Dr.	Mar-18	100	$360,000	0	0	0	0	107,223	**107,223**
Annette Rec Centre	333 Annette St.	Dec-15	10	$42,400	0	0	11,402	8,663	9,987	**30,052**
Baycrest Arena	160 Neptune Dr.	Mar-18	140	$504,000	0	0	0	0	52,141	**52,141**
Bayview Arena	3230 Bayview Ave.	Mar-18	100	$360,000	0	0	0	0	65,658	**65,658**
Beaches Rec Centre	6 Williamson Rd.	Nov-15	10	$42,400	0	0	11,310	12,990	7,636	**31,936**
Bendale Library	1515 Danforth Rd.	Sep-17	10	$33,000	0	0	0	0	7,301	**7,301**
Bentworth Park Yard	140 Bentworth Ave.	Jan-18	80	$288,000	0	0	0	0	101,429	**101,429**
Bermondsey Yard	25 Old Eglinton Ave.	Jul-18	50	$132,000	0	0	0	0	19,289	**19,289**
Birchmount Parks Yard	101 Ridgetop Rd.	Feb-18	49.9	$160,000	0	0	0	331	59,342	**59,672**
Brentwood Library	36 Brentwood Rd. N	Nov-17	10	$33,000	0	0	0	0	8,249	**8,249**
Centennial Rec Centre (Ice Galaxy)	1967 Ellesmere Rd.	Aug-17	130	$350,000	0	0	0	42,526	163,719	**206,245**
Central Equipment Yard	1026 Finch Ave. W	Jan-18	500	$1,500,000	0	0	0	0	618,583	**618,583**
Clairlea Park	45 Fairfax Cres.	Feb-18	100	$264,000	0	0	0	42,792	105,896	**148,688**
Commander Park Community Centre	140 Commander Blvd.	Feb-18	240	$634,000	0	0	0	0	311,390	**311,390**
Cummer Arena	6000 Leslie St.	Feb-16	100	$239,000	0	0	144,328	140,366	116,038	**400,732**
Danforth Coxwell Library	1675 Danforth Ave.	Sep-17	10	$33,000	0	0	0	0	22,010	**22,010**
Disco Transfer Station	120 Disco Rd.	Mar-16	100	$189,700	0	0	127,940	124,630	116,203	**368,774**
Disco Yard	150 Disco Rd.	Feb-16	300	$463,800	0	0	405,680	390,270	355,643	**1,151,593**

Location	Address	Installation Date	System Capacity (kW)	Project Cost	Energy Generated (kWh)					
					2014	2015	2016	2017	2018	Total
Don Montgomery	2467 Eglinton Ave. E	Mar-18	240	$864,000	0	0	0	0	276,259	**276,259**
Dyas Road	18 Dyas Rd.	Feb-18	100	$264,000	0	0	0	17,379	129,612	**146,991**
East Service Building	1076 Ellesmere Rd.	Nov-15	10	$45,300	0	90	12,441	9,834	10,036	**32,401**
East York Arena	888 Cosburn Ave.	Jan-18	130	$343,000	0	0	0	0	128,387	**128,387**
East York Civic Centre	850 Coxwell Ave.	Feb-12	30	Unavailable	0	0	43,223	36,496	37,948	**117,667**
Edithvale Community Centre	7 Edithvale Dr.	Feb-14	10	$43,600	7,552	10,507	11,660	9,341	10,404	**49,464**
Election Services Building	89 Northline Rd.	Jan-18	140	$370,000	0	0	0	0	172,146	**172,146**
Ellesmere Yard	1050 Ellesmere Rd.	Nov-15	10	$58,800	0	0	6,004	20,915	10,974	**37,893**
EMS Station #17	643 Eglinton Ave. W	Nov-15	10	$43,800	0	102	10,396	9,276	9,296	**29,070**
EMS Station #33	760 Dovercourt Rd.	Feb-14	4	$27,700	4,524	5,359	5,550	4,802	5,021	**25,256**
EMS Station #38	259 Horner Ave.	Aug-15	10	$43,800	0	0	12,144	11,599	11,212	**34,955**
EMS Station #44	887 Pharmacy Ave.	Nov-15	10	$45,800	0	337	12,880	11,661	11,635	**36,513**
Etobicoke Olympium	590 Rathburn Rd.	Mar-16	150	$253,000	0	0	193,318	169,570	142,160	**505,048**
F.J. Horgan Filtration Plant	201 Copperfield Rd.	Jul-12	86.4	Unavailable	Unavailable	Unavailable	Unavailable	66,644	52,916	**119,559**
Fairbank Memorial Rec Centre	2213 Dufferin St.	Nov-15	10	$45,000	0	207	8,507	13,787	9,013	**31,514**
Fairfield Senior Centre	80 Lothian Ave.	May-17	10	$33,000	0	0	0	7,355	10,462	**17,817**
Fire Station 145	20 Beffort Rd.	Apr-17	10	$33,000	0	0	0	0	9,490	**9,490**
Fire Station 334	339 Queens Quay W	Jul-12	3.2	Unavailable	0	3,188	3,883	3,282	3,619	**13,972**
Fire Station 413	1549 Albion Rd.	Jun-17	10	$33,000	0	0	0	0	9,263	**9,263**
Fire Station 415	2120 Kipling Ave.	Dec-15	10	$46,400	0	0	13,797	10,649	10,293	**34,739**
Fire Station 424	462 Runnymede Rd.	Dec-10	1.2	Unavailable	0	0	0	106	1,303	**1,409**
Fire Station 426	140 Lansdowne Ave.	Jun-17	10	$33,000	0	0	0	143	9,437	**9,580**
Fire Station 441	947 Martin Grove Rd.	Nov-15	10	$45,300	0	0	10,090	9,604	9,542	**29,236**
Gord & Irene Arena and Rec Centre	2650 Finch Ave. W	May-18	100	$360,000	0	0	0	0	87,315	**87,315**
Goulding Arena & Rec Centre	45 Goulding Ave.	Mar-13	75	$235,000	85,467	96,468	94,495	86,745	78,964	**442,140**
Grandravine Arena & Rec Centre	25 Grandravine Dr.	Mar-13	100	$306,000	124,351	135,356	144,038	130,928	112,650	**647,323**
Gwendolen Tennis Clubhouse	3 Gwendolen Cres.	Jan-16	10	$40,000	0	0	9,241	16,200	8,959	**34,400**
Habitant Arena	3383 Weston Rd.	Mar-18	120	$432,000	0	0	0	0	52,325	**52,325**
Herbert Carnegie Centennial Arena	580 Finch Ave. W	Feb-18	240	$634,000	0	0	0	0	195,553	**195,553**

Location	Address	Installation Date	System Capacity (kW)	Project Cost	Energy Generated (kWh)					
					2014	2015	2016	2017	2018	Total
Humber Bay Park	2225 Lakeshore Blvd. W	Dec-15	10	$40,000	0	0	12,405	10,690	10,844	**33,939**
Ingram Works Yard	86 Ingram Dr.	Feb-18	100	$264,000	0	0	0	12,280	115,372	**127,653**
Jane Sheppard Library	1906 Sheppard Ave. W	Oct-17	10	$33,000	0	0	0	0	8,249	**8,249**
King St. Garage	1116 King St. W	Dec-15	175	$293,400	0	0	256,136	230,923	206,003	**693,063**
Kipling Acres	2233 Kipling Ave.	Feb-16	225	$255,500	0	0	201,997	190,300	181,753	**574,049**
Malvern Community Centre	30 Sewells Rd.	Jun-11	210	$515,400	158,619	324,646	338,515	300,194	275,905	**1,397,881**
McCormick Rec Centre	66 Sheridan Ave.	Feb-16	175	$285,800	0	0	227,782	215,770	197,433	**640,984**
McGregor Park Community Centre	2231 Lawrence Ave. E	Feb-13	75	$300,000	0	0	0	0	133,350	**133,350**
McGregor Park Community Centre	2231 Lawrence Ave. E	Feb-18	120	$317,000	100,832	112,481	132,495	107,440	96,253	**549,500**
Mimico Arena	31 Drummond St.	Feb-13	62	$196,500	71,379	62,332	76,769	63,123	63,985	**337,587**
Mitchell Field Arena	89 Church Ave.	Jan-18	120	$432,000	0	0	0	0	131,510	**131,510**
Mount Dennis Library	1123 Weston Rd.	Nov-17	10	$33,000	0	0	0	0	8,999	**8,999**
Neilson Park Creative Arts	56 Neilson Dr.	Feb-14	10	$41,400	10,067	10,614	11,233	10,717	8,092	**50,723**
North York Animal Centre	1300 Sheppard Ave. W	Jun-17	10	$33,000	0	0	0	4,455	8,272	**12,727**
Oriole Community Centre	2975 Don Mills Rd.	Jan-18	220	$581,000	0	0	0	0	551,449	**551,449**
Palmerston Library	560 Palmerston Ave.	Oct-17	10	$33,000	0	0	0	0	7,434	**7,434**
Parkway Forest Community Centre	55 Forest Manor Rd.	Jan-18	80	$240,000	0	0	0	0	93,076	**93,076**
Parliament Library	269 Gerrard St. E	Aug-17	10	$33,000	0	0	0	2,832	8,176	**11,008**
Police Academy	70 Birmingham St.	Mar-13	216	$505,000	Unavailable	Unavailable	Unavailable	233,232	295,250	**528,482**
Police Academy	70 Birmingham St.	Feb-18	200	$528,000	0	0	0	2,168	275,495	**277,662**
Police Garage	18 Cranfield Rd.	Aug-17	150	$422,000	0	0	0	72,095	193,000	**265,094**
Property Bureau	799 Islington Ave.	Feb-18	150	$252,900	0	0	187,994	192,876	153,792	**534,662**
Ramsden Yard	1008 Yonge St.	May-17	10	$33,000	0	0	0	0	9,374	**9,374**
Roding Arena & Rec Centre	600 Roding St.	Mar-13	75	$234,000	93,771	106,011	104,662	94,873	83,161	**482,479**
S. Walter Stewart Library	170 Memorial Park Ave.	Nov-17	10	$33,000	0	0	0	0	9,945	**9,945**
Scarborough Civic Centre	150 Borough Dr.	Mar-18	100	$264,000	0	0	0	0	105,765	**105,765**
Scarborough Transfer Station	1 Transfer Pl.	Feb-18	300	$792,000	0	0	0	44,931	382,092	**427,023**
Scarborough Village Community Centre	3600 Kingston Rd.	Nov-17	130	$343,000	0	0	0	4,557	163,856	**168,413**
Teaching Kitchen	105 Colborne Lodge Dr.	Dec-14	4	$19,300	Unavailable	Unavailable	Unavailable	2,073	3,101	**5,174**

Location	Address	Installation Date	System Capacity (kW)	Project Cost	Energy Generated (kWh)					
					2014	2015	2016	2017	2018	Total
Ted Reeve Community Arena	175 Main St.	Jan-18	130	$343,000	0	0	0	0	115,199	**115,199**
Traffic Services and Garage	9 Hanna Ave.	Mar-10	50	Unavailable	0	0	53,452	32,152	40,608	**126,211**
Victoria Village Arena	190 Bermondsey Rd.	Mar-13	90	$281,500	91,309	76,256	127,802	111,361	105,835	**512,564**
Wallace Emerson Community Centre	1260 Dufferin St.	Feb-18	100	$264,000	0	0	0	0	72,693	**72,693**
Warden Hilltop Community Centre	25 Mendelssohn St.	Aug-17	40	$120,000	0	0	0	13,836	51,930	**65,766**
Warden Hilltop Community Centre	25 Mendelssohn St.	Feb-14	10	$46,100	7,708	9,512	11,322	9,068	8,876	**46,486**
York Civic Centre	2700 Eglinton Ave. W	Feb-14	10	$43,300	9,941	8,667	10,212	9,590	5,368	**43,778**
York Community Centre	115 Black Creek Dr.	Nov-17	10	$33,000	0	0	0	0	6,116	**6,116**
York Mills Arena	2539 Bayview Ave.	Feb-13	75	$274,800	92,289	194,549	113,668	102,659	94,409	**597,574**
York Woods Library	1785 Finch Ave. W	Nov-17	46	$150,000	0	0	0	2,027	57,378	**59,404**

Appendix B: City of Toronto Energy Efficiency Measures (2014-2018)

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Administrative Offices	Archives and Records Centre	255 Spadina Rd.	2016	2016	Electrical	LED lighting retrofit in lobby	$20,123	N/A	N/A	24,440	N/A	N/A	$3,593
Administrative Offices	Archives and Records Centre	255 Spadina Rd.	2016	2018	Mechanical	Replace Chiller 1/2 and humidifier	$536,738	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Consolidated Communication Centre	703 Don Mills Rd.	2013	2016	Mechanical	Chiller replacement	$4,169,506	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Dyas Road	18 Dyas Rd.	2017	2018	Electrical	Building-wide LED lighting retrofit	$247,195	Toronto Hydro	$6,294	145,000	N/A	N/A	$21,315
Administrative Offices	Dyas Road Archive Building	14 Dyas Rd.	2015	2016	Structural	Repairs to lower roof above office area	$99,729	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	East York Civic Centre	850 Coxwell Ave.	2017	2018	Electrical	LED lighting	$271,804	Toronto Hydro	$19,749	201,753	N/A	N/A	$29,658
Administrative Offices	Election Services Building	89 Northline Rd.	2013	2016	Structural	Roof replacement over office and warehouse	$1,063,627	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Etobicoke Civic Centre	399 The West Mall	2017	2018	Mechanical	Install new steam boiler system	$403,928	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Metro Hall	55 John St.	Jan-15	Jan-18	Mechanical	Tenant floor pneumatic upgrade	$2,487,888	Toronto Hydro	$119,832	N/A	N/A	N/A	N/A
Administrative Offices	Metro Hall	55 John St.	2015	2016	Electrical	LED lighting retrofit in lobby	$234,770	N/A	N/A	122,544	N/A	N/A	$18,014
Administrative Offices	Metro Hall	55 John St.	2018	2018	Mechanical	Replace tube heat exchangers with plate heat exchangers	$166,814	N/A	N/A	N/A	1,133,763	N/A	$307,250
Administrative Offices	Metro Hall & City Hall	55 John St. & 100 Queen St. W	2017	2018	Electrical	Building-wide LED lighting retrofit	$2,100,000	Toronto Hydro	$169,716	1,442,505	N/A	N/A	$212,048
Administrative Offices	North York Civic Centre	5100 Yonge St.	2017	2018	Electrical	Building-wide LED lighting retrofit	$667,530	Toronto Hydro	$42,192	854,114	N/A	N/A	$125,555
Administrative Offices	North York Civic Centre	5100 Yonge St.	2015	2016	Mechanical	Replace rooftop air handling units F-2*	$1,355,839	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	Aug-14	Apr-15	Mechanical	BAS replacement	$885,887	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Old City Hall	60 Queen St. W	2017	2018	Electrical	Building-wide LED lighting retrofit	$443,195	Toronto Hydro	$44,695	386,702	N/A	N/A	$56,845
Administrative Offices	Queen Street Office	1631 Queen St. E	2015	2018	Structural/Mechanical	Replace air conditioner unit AC-5 and chilled water condenser. Repair exposed structural steel framing in	$727,525	N/A	N/A	N/A	N/A	N/A	N/A

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
						daycare. Replace metal frame windows on all floors. *							
Administrative Offices	Scarborough Civic Centre	150 Borough Dr.	2017	2018	Electrical	Building-wide LED lighting retrofit	$1,027,460	Toronto Hydro	$53,498	977,327	N/A	N/A	$143,667
Administrative Offices	Scarborough Civic Centre	150 Borough Dr.	2017	2018	Structural	Replace roofing membrane	$1,377,526	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Scarborough Civic Centre	150 Borough Dr.	Jul-15	Aug-17	Mechanical	BAS replacement	$1,164,918	Enbridge	$6,735	N/A	N/A	N/A	N/A
Administrative Offices	Wellesley Jarvis Office	111 Wellesley St. E	2013	2016	Mechanical	Replace heat pump units*	$876,562	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Ambulance Headquarters	4330 Dufferin St.	2014	2016	Mechanical	Replace supply fan S-8 for north wing	$343,994	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Ambulance Headquarters	4330 Dufferin St.	2015	2017	Mechanical	Upgrade HVAC system for 3rd floor	$616,583	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Ambulance Headquarters	4330 Dufferin St.	2017	2018	Electrical	Building-wide LED lighting retrofit	$235,964	Toronto Hydro	$27,320	185,196	N/A	N/A	$27,224
Ambulance Stations	Ambulance Headquarters	4330 Dufferin St.	Oct-16	Aug-17	Mechanical	North building pneumatic upgrades	$94,700	Toronto Hydro	$12,141	N/A	N/A	N/A	N/A
Ambulance Stations	NE District Office / Station #20	2430 Lawrence Ave. E	2014	2016	Structural	Exterior wall rehabilitation	$115,163	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #34	674 Markham St.	2014	2016	Structural	Exterior wall rehabilitation and repair exterior wood trim and metal flashings	$217,265	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #34	674 Markham St.	2015	2016	Mechanical	Install Central HVAC systems	$455,954	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #38	259 Horner Ave.	2014	2016	Structural	Replace windows and doors*	$414,364	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #45	135 Davenport Rd.	2016	2016	Structural	Exterior wall rehabilitation	$63,829	N/A	N/A	N/A	N/A	N/A	N/A
Animal Centres	East Animal Centre	146 The East Mall	2015	2016	Mechanical	Upgrade HVAC system for dog kennel area	$157,366	N/A	N/A	N/A	N/A	N/A	N/A
Animal Centres	North Animal Centre	1300 Sheppard Ave. W	2013	2014	Structural/Mechanical	Repair roofing, upgrade HVAC, and upgrade building automation system	$130,732	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Northwood Community Centre	15 Clubhouse Crt.	2018	2018	Structural	Roofing and building envelope repairs, foundation wall waterproofing*	$1,100,000	N/A	N/A	N/A	N/A	N/A	N/A

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Community Centres	Port Union Community Centre	5450 Lawrence Ave. E	2015	2015	Mechanical	Replacement of HVAC system including tie-ins to BAS system*	$442,000	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Regent Park North Rec Centre	295 Sackville St.	2016	2016	Structural	Roof rehabilitation*	$878,000	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Thistledown Community Centre	925 Albion Rd.	2014	2014	Structural	Building Envelope Repairs*	$419,750	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	Cedar Ridge Creative Centre	225 Confederation Dr.	Oct-18	Nov-18	Electrical	Replacement of interior T12/T8 fluorescent lighting with LED lighting	$20,000	N/A	N/A	5%-10%	N/A	N/A	N/A
Cultural Facilities	Historic Fort York	100 Garrison Rd.	Nov-18	Dec-18	Mechanical	Replacement of four mid-efficiency furnaces with four high-efficiency models	$25,000	N/A	N/A	10%-15%	10%-15%	N/A	N/A
Cultural Facilities	Montgomery's Inn	4709 Dundas St. W	Sep-18	Dec-18	Mechanical	HVAC installation and replacement of electric heater with natural gas service	$80,000	N/A	N/A	5%-10%	N/A	N/A	N/A
Cultural Facilities	Neilson Park Creative Centre	56 Neilson Dr.	Dec-17	Apr-18	Electrical	Replacement of exterior and interior high pressure sodium/halogen/T8 lighting with LED lighting	$135,000	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St. Lawrence Market South	91 Front St. W	Jul-17	Aug-18	Mechanical	BAS replacement	$579,353	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	Zion School House	1091 Finch Ave E.	Oct-18	Oct-18	Electrical	Replacement of exterior high pressure sodium/metal halide lighting with LED lighting	$2,000	N/A	N/A	3%-5%	N/A	N/A	N/A
Fire Stations	Fire Station 114	12 Canterbury Pl.	2013	2014	Structural/Mechanical	Exterior wall rehabilitation, replace roof-top HVAC unit*	$410,095	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 134	16 Montgomery Ave.	2016	2018	Structural	Replace roof	$131,500	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 141	4100 Keele St.	Aug-17	Dec-17	Mechanical	BAS replacement	$49,900	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 143	1009 Sheppard Ave.	2017	2018	Mechanical	Upgrade HVAC system*	$592,950	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 213	7 Lapsley Rd.	2015	2016	Structural	Replace roofing systems	$156,909	N/A	N/A	N/A	N/A	N/A	N/A

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Fire Stations	Fire Station 234	40 Coronation Dr.	2015	2015	Structural	Replace roofing systems	$98,676	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 312	34 Yorkille Ave.	2013	2014	Structural	Roof membane replacement and window repair	$257,119	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 325	475 Dundas St. E	2015	2016	Structural	Roof replacement	$181,156	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 331	31 Claremont Ave.	2015	2017	Mechanical/Structural	Replace roof and mechanical equipment	$1,019,001	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 334	339 Queens Quay	2017	2018	Structural	Replace inverted roof	$144,968	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 413	1549 Albion Rd.	2016	2018	Structural	Replace doors and mechanical equipment	$501,912	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 424	462 Runnymede Rd.	2016	2017	Structural	Replace Windows and repair brick exterior	$211,722	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 426	140 Lansdowne Ave.	2015	2018	Structural	Replace roofing and windows	$886,379	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 441	947 Martin Grove Rd.	2013	2014	Structural	Replace training centre roofing	$97,791	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Rec Facilities	Agincourt Arena and R.C.	31 Gled Watford Dr.	2017	2018	Electrical	LED lighting retrofit over the pool	$54,724	Toronto Hydro	$5,324	67,502	N/A	N/A	$9,923
Indoor Rec Facilities	Birchmount C.C.	93 Birchmount Rd.	2017	2018	Electrical	LED lighting retrofit over the pool	$43,481	Toronto Hydro	$6,424	98,745	N/A	N/A	$14,516
Indoor Rec Facilities	Birchmount Community Centre	93 Birchmount Rd.	2014	2014	Structural	Roof Replacement*	$488,581	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Rec Facilities	Centennial R.C.	1967 Ellesmere Rd.	2017	2018	Electrical	LED lighting retrofit over the pool	$38,552	Toronto Hydro	$1,760	20,698	N/A	N/A	$3,043
Indoor Rec Facilities	Cummer Arena	6000 Leslie St.	2017	2018	Electrical	LED lighting retrofit over the pool	$27,057	Toronto Hydro	$2,200	26,438	N/A	N/A	$3,886
Indoor Rec Facilities	Jimmie Simpson Rec Centre	870 Queen St. E	2017	2017	Structural	Replacement roofing	$465,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Rec Facilities	Oriole Arena & Rec Centre	2975 Don Mills Rd.	2014	2014	Mechanical/Structural	Roofing, building envelope repairs, mechanical & pool deck*	$5,200,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Rec Facilities	Pleasantview Arena & Rec Centre	545 Van Horne Ave.	2016	2016	Structural	Replacement roofing	$100,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Rec Facilities	Roding Arena & Rec Centre	600 Roding St.	2016	2016	Electrical/Mechanical/Structural	Windows, Hot water tanks, Lighting (interior & exterior)	$140,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Sports Arenas	Commander Park Community Centre	140 Commander Blvd.	2017	2017	Structural	Re-roofing	$100,000	N/A	N/A	N/A	N/A	N/A	N/A

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Indoor Sports Arenas	East York Arena	888 Cosburn Ave.	2015	2015	Structural	Re-roofing including upgraded roof insulation	$90,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Sports Arenas	Herbert Carnegie Centennial Arena	580 Finch Ave. W	2015	2015	Structural	Roof replacement including insulation*	$2,491,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Sports Arenas	Long Branch Arena	75 Arcadian Cir.	2014	2014	Structural	Roof replacement	$405,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Sports Arenas	Scarborrough Village CC	3600 Kingston Rd.	2014	2014	Structural	Roof replacement including insulation*	$111,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	Albion Community Centre & Pool	1485 Albion Rd.	2014	2014	Structural	Roofing replacement including insulation*	$361,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	Albion Community Centre & Pool	1485 Albion Rd.	2017	2018	Electrical	LED lighting retrofit over the pool	$63,682	Toronto Hydro	$4,150	41,362	N/A	N/A	$6,080
Indoor Swimming Pools	Annette R.C.	333 Annette St.	2017	2018	Electrical	LED lighting retrofit over the pool	$31,207	Toronto Hydro	$3,120	41,648	N/A	N/A	$6,122
Indoor Swimming Pools	Antibes Park	140 Antibes Dr.	2017	2018	Electrical	LED lighting retrofit over the pool	$82,915	Toronto Hydro	$1,975	14,053	N/A	N/A	$2,066
Indoor Swimming pools	Cummer Arena	6000 Leslie St.	2014	2014	Mechanical	New Dry-O-Tron mechanical unit for the pool	$50,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	East York Community Centre	1081A Pape Ave.	2017	2018	Electrical	LED lighting retrofit over the pool	$35,530	Toronto Hydro	$2,240	29,523	N/A	N/A	$4,340
Indoor Swimming Pools	Etobicoke Olympium	590 Rathburn Rd.	2017	2018	Electrical	LED lighting retrofit over the pool	$287,286	Toronto Hydro	$7,105	532,293	N/A	N/A	$78,247
Indoor Swimming Pools	Flemingdon R.C. and Pool	29 St. Dennis Dr.	2017	2018	Electrical	LED lighting retrofit over the pool	$39,337	Toronto Hydro	$2,480	32,830	N/A	N/A	$4,826
Indoor Swimming Pools	Joseph.J. Piccininni R.C.	1369 St. Clair Ave. W	2017	2018	Electrical	LED lighting retrofit over the pool	$49,532	Toronto Hydro	$3,520	42,874	N/A	N/A	$6,302
Indoor Swimming Pools	Main Square Community Centre	245 Main St.	2017	2018	Electrical	LED lighting retrofit over the pool	$60,591	Toronto Hydro	$3,124	33,449	N/A	N/A	$4,917
Indoor Swimming Pools	Matty Eckler Rec Centre	953 Gerrard St. E	2017	2017	Structural	Complete roof replacement	$273,000	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	Norseman Community School and Pool	105 Norseman St.	2017	2018	Electrical	LED lighting retrofit over the pool	$35,675	Toronto Hydro	$2,880	38,366	N/A	N/A	$5,640
Indoor Swimming Pools	Regent Park Aquatic Centre	640 Dundas St. E	2017	2018	Electrical	LED lighting retrofit over the pool	$120,000	Toronto Hydro	$3,564	102,088	N/A	N/A	$15,007
Indoor Swimming Pools	Scadding Count Community Centre	707 Dundas St. W	2017	2018	Electrical	LED lighting retrofit over the pool	$60,217	Toronto Hydro	$520	9,491	N/A	N/A	$1,395
Indoor Swimming Pools	The Elms Pool and Community School	46 Golfdown Dr.	2017	2018	Electrical	LED lighting retrofit over the pool	$34,007	Toronto Hydro	$2,640	35,209	N/A	N/A	$5,176

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Indoor Swimming Pools	Trinity Community Rec Centre	155 Crawford St.	2017	2018	Electrical	LED lighting retrofit over the pool	$73,010	Toronto Hydro	$3,520	52,550	N/A	N/A	$7,725
Long-Term Care Homes	All Long-Term Care Home Locations (10)	Multiple	Jun-17	Dec-17	Mechanical	Laundry upgrades	$1,500,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Bendale Acres	2920 Lawrence Ave. E	Jun-15	Dec-16	Mechanical	Kitchen upgrades	$750,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Bendale Acres	2920 Lawrence Ave. E	Jun-16	Dec-17	Mechanical	HVAC upgrade	$1,000,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Carefree Lodge	306 Finch Ave. E	Jun-14	Dec-15	Mechanical	Laundry upgrade	$250,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Carefree Lodge	306 Finch Ave. E	Jun-16	Dec-17	Mechanical	HVAC upgrade	$800,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Castleview Wychwood Towers	351 Christie St.	Jan-14	May-14	Electrical	Lighting replacement	$150,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Castleview Wychwood Towers	351 Christie St.	May-18	Dec-18	Structural	Roofing	$250,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Cummer Lodge	205 Cummer Ave.	Jun-15	Dec-16	Mechanical	HVAC control system	$500,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Cummer Lodge	205 Cummer Ave.	Jun-15	Dec-16	Mechanical	Boiler replacement	$500,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Fudger House	439 Sherbourne Ave.	Jun-15	Dec-16	Mechanical	HVAC upgrade	$300,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Seven Oaks	9 Neilson Rd.	Jan-18	Dec-18	Electrical/Structural	Lighting and door replacement	$550,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Seven Oaks	9 Neilson Rd.	Jun-16	Dec-17	Mechanical	HVAC upgrade	$1,000,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Seven Oaks	9 Neilson Rd.	Jun-18	Dec-18	Mechanical	HVAC upgrade	$2,000,000	Enbridge	$70,000	N/A	N/A	N/A	N/A
Long-Term Care Homes	Seven Oaks & Lakeshore Lodge	3197 Lakeshore Blvd.	Jan-14	May-14	Electrical	Lighting replacement (resident room)	$1,200,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	True Davidson Acres	200 Dawes Rd.	Jun-14	Dec-15	Mechanical	Replace one cooling unit	$200,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	True Davidson Acres	200 Dawes Rd.	Jun-16	Dec-17	Mechanical	Kitchen upgrades	$800,000	N/A	N/A	N/A	N/A	N/A	N/A
Parking Garages	20 Saint Andrews St.	20 Saint Andrews St.	2017	2018	Electrical	Replace 175W metal halide fixtures with LED fixtures	$320,394	Toronto Hydro	$24,321	486,422	N/A	N/A	$71,504
Parking Garages	33 Queen St. E.	33 Queen St. E	2017	2018	Electrical	Replace 175W metal halide fixtures with LED fixtures	$484,605	Toronto Hydro	$30,232	606,455	N/A	N/A	$89,149

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Performing Arts Facilities	Sony Centre for the Arts	1 Front St. E	2015	2015	Electrical	LED lighting retrofit	$44,000	N/A	N/A	19,127	N/A	N/A	$2,812
Police Stations	#23 Police Division	5230 Finch Ave. W	Jun-15	May-16	Mechanical	BAS replacement	$40,999	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	#32 Police Divison	30 Ellerslie Ave.	Oct-14	Aug-16	Mechanical	BAS replacement	$359,300	Toronto Hydro	$21,967	N/A	N/A	N/A	N/A
Police Stations	#43 Police Division	4331 Lawrence Ave. E	Sep-16	Jan-18	Mechanical	BAS replacement	$489,666	Enbridge	$2,352	N/A	N/A	N/A	N/A
Police Stations	#53 Police Division	75 Eglinton Ave. W	2015	2017	Structural	Replace flat roof	$296,591	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	#55 Police Division	101 Coxwell Ave.	2015	2016	Mechanical	Replace electric heater AV-3	$294,240	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Intelligence Bureau	30 Upjohn St.	2016	2017	Mechanical	Replace domestic hot water tank*	$352,819	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Intelligence Bureau	30 Upjohn St.	2017	2017	Structural	Rehabilitation of skylights	$364,604	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Dog Service	44 Beechwood Dr.	2017	2017	Structural/Mechanical	Replace HVAC unit, building automation system, all flat sloped roofing, retaining walls	$235,437	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Headquarters	40 College St.	2017	2018	Electrical	Re-lamp to T8 LED Lamps, replace pot lights, fire exit signs and sconces.	$270,915	Toronto Hydro	$55,273	N/A	N/A	N/A	N/A
Police Stations	Police Headquarters	40 College St.	2015	2017	Mechanical	Replace fluid coolers, piping, and control valves for computer room units	$713,146	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Headquarters	40 College St.	2017	2017	Structural	Replace roof	$279,752	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Marine HQ	259 Queens Quay W	2015	2016	Mechanical	Replace exhaust fan and circulating pumps*	$580,934	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Marine HQ	259 Queens Quay W	2016	2017	Structural	Replace roof	$319,123	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Amesbury Park	1565 Lawrence Ave. W	Unavailable	Unavailable	Structural	Building Envelope Replacement/ Clerestory Windows	$75,000	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Barbara Frum	20 Covington Rd.	Unavailable	Unavailable	Mechanical	New boiler	Unavailable	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Beaches	2161 Queen St. E	Unavailable	Unavailable	Electrical	LED Lighting Conversion	$67,000	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	College Shaw	766 College St.	Unavailable	Unavailable	Mechanical	Roof-Top Unit (AHU)	Unavailable	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Downsview	2793 Keele St.	Unavailable	Unavailable	Mechanical	Energy efficient furnaces	Unavailable	N/A	N/A	N/A	N/A	N/A	N/A

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Public Libraries	Eatonville	430 Burnhamthorpe Rd.	Unavailable	Unavailable	Electrical	LED upgrade and daylight harvesting	Unavailable	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Elmbrook Park	2 Elmbrook Cres.	Unavailable	Unavailable	Mechanical	HVAC upgrades	$58,000	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Goldhawk Park	295 Alton Towers Cir.	Sep-15	Jul-16	Structural	Vestibule replacement	$39,492	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Lillian H Smith	239 College St.	Unavailable	Unavailable	Mechanical	Upgrade to hydronic condensing boiler from two low pressure steam boilers	$1,050,000	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	North York Central	5120 Yonge St.	Unavailable	Unavailable	Electrical/Mechanical/Structural	Building envelope replacement, HVAC work, LED lighting retrofit	Unavailable	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Richview	1806 Islington Ave.	Unavailable	Unavailable	Electrical	Lighting retrofit	Unavailable	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Spadina Road	10 Spadina Rd.	17-Nov	2018	Structural	Roof top replacement	$36,150	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Toronto Reference Library	789 Yonge St.	Unavailable	Unavailable	Mechanical	Cooling tower (energy efficient motors)	Unavailable	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Weston	2 King St.	Mar-18	Dec-18	Mechanical/Structural	Boilers and roof-top AHU & roof replacement	$261,126	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Birchmount Parks Yard	101 Ridgetop Rd.	2015	2015	Structural	Roof Replacement*	$239,884	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Disco Yard	150 Disco - Building 102 & 103	2013	2014	Structural	Replace roof membrane	$549,131	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Morningside Yard	891 Morningside Ave.	2017	2017	Structural	Exterior wall rehabilitation	$361,981	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Nashdene Yard	70 Nashdene Rd.	2015	2015	Structural	New Roofing System*	$260,000	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Rockcliffe Yard	301 Rockcliffe Blvd.	2014	2014	Structural	Roofing Replacement*	$345,000	N/A	N/A	N/A	N/A	N/A	N/A

*Project includes non-energy efficiency measures

Appendix C: City of Toronto Energy Efficiency Measures (2019-2024)

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Administrative Offices	Archives and Records Centre	255 Spadina Rd.	2022	2023	Mechanical	Replace exhaust fans and ductwork	$151,593	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Archives and Records Centre	255 Spadina Rd.	2023	2024	Mechanical	Domestic hot water heater (DHWH-1) replacement	$41,585	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Archives and Records Centre	255 Spadina Rd.	2023	2024	Structural	Replace exterior doors and windows	$326,435	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Atlantic Avenue Storage	98 Atlantic Ave.	Sep-19	Oct-19	Mechanical	Upgrade hot water boiler and HVAC system	$80,000	N/A	N/A	5%-10%	5%-10%	10%-15%	N/A
Administrative Offices	Chaplin Crescent Storage	29 Chaplin Cres.	Oct-19	Dec-19	Electrical	Replace interior and exterior T8/T12/high pressure sodium lighting with LED lighting	$5,000	N/A	N/A	5%-10%	N/A	N/A	N/A
Administrative Offices	City Hall	100 Queen St. W	2022	2024	Mechanical	Replace fan coil units at entrances to east & west towers	$2,304,438	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	City Hall	100 Queen St. W	2019	2020	Structural	Replace all windows on 1st/2nd floor and in council chamber	$3,473,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	City Hall	100 Queen St. W	2022	2023	Structural	Replace PVC membrane of council chamber roofing	$1,396,200	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	City Hall	100 Queen St. W	2015	2019	Structural	Replace concrete soffit slats, grid hangers, and vertical semi-rigid sections above 2nd floor windows	$5,167,440	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Consolidated Communication Centre	703 Don Mills Rd.	2019	2019	Mechanical	Replace Chilled Water System (#3) c/w Chiller,CT& Pumps & 2nd Chilled Water Distribution System	$1,200,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Consolidated Communication Centre	703 Don Mills Rd.	2021	2022	Mechanical	Replace air handling unit SF-1, SF-2 & RF-1	$1,356,551	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Consolidated Communication Centre	703 Don Mills Rd.	2023	2024	Mechanical	Replace shell and tube heat exchangers	$167,557	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Consolidated Communication Centre	703 Don Mills Rd.	2018	2020	Mechanical	Mechanical pipe upgrades	$2,380,868	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Dyas Road	18 Dyas Rd.	2019	2021	Mechanical	Replace heat pumps	$1,332,219	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	East York Civic Centre	850 Coxwell Ave.	2023	2024	Mechanical	Replace H.W. Unit Heaters	$150,752	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	East York Civic Centre	850 Coxwell Ave.	2023	2024	Mechanical	Replace Circulation Pumps & Piping	$344,747	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	East York Civic Centre	850 Coxwell Ave.	2023	2024	Mechanical	Replace Computer Room Closed Circuit Cooling System	$320,749	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	East York Civic Centre	850 Coxwell Ave.	2023	2024	Mechanical	Replace Exhaust Fans & Ductwork	$495,830	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Election Services Building	89 Northline Rd.	2022	2023	Mechanical	Replace Rooftop HVAC Unit # 4 c/w Controls	$45,193	N/A	N/A	N/A	N/A	N/A	N/A

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Administrative Offices	Former Hydro Bldg	1652 Keele St.	2022	2023	Electrical	Replacement of original power service	$103,874	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Former Hydro Bldg	1652 Keele St.	2021	2022	Mechanical	Upgrade existing building heating system and controls	$383,243	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Health Office	662 Jane St.	2023	2024	Structural	Windows and exterior doors replacement	$117,905	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Metro Hall	55 John St.	2023	2024	Mechanical	Replace Three (3) Central AHU Unit (Tap Units)	$294,131	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Metro Hall	55 John St.	2023	2024	Mechanical	Replace Eight (8) Shell & Tube Heat Exchangers	$339,536	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Metro Hall	55 John St.	2023	2024	Mechanical	Overhaul Four(4) Smoke & Three(3) San Exhaust Fan	$528,398	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Metro Hall	55 John St.	2023	2024	Mechanical	Replace 2nd Flr Office 20 FCU and 99 VAV Boxes	$1,133,911	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Metro Hall	55 John St.	2019	2020	Structural	Rehabilitation of Revolving Door at West Entrance	$700,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Municipal & East Court Offices	1530 Markham Rd.	2019	2020	Mechanical	Replace original boilers	$206,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2019	2020	Mechanical	Rooftop unit replacements	$109,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2019	2020	Mechanical	Garage supply/exhaust fan replacements	$198,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2019	2020	Mechanical	Replace re-heat coils	$1,049,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2019	2020	Mechanical	Domestic hot water heater replacements (By-pass)	$41,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2020	2021	Mechanical	Replace hot water unit heaters In penthouse	$47,062	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2020	2021	Mechanical	Replace domestic cold water booster pumps, and controls	$59,478	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2023	2024	Mechanical	Replace server room A/C Unit dry cooler and pump	$137,607	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2019	2019	Structural	Replace existing Structural sealants	$287,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2019	2019	Structural	Replace roof membrane anchor window glazing - Phase II	$5,500,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2023	2024	Structural	Replacement of exterior doors, frames, and hardware	$468,115	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	North York Civic Centre	5100 Yonge St.	2016	2019	Structural	Replace roof membrane and anchor window glazing	$421,773	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Old City Hall	60 Queen St. W	2020	2022	Mechanical	HVAC Phase B	$1,050,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Pape Avenue Multiuse Building	126 Pape Ave.	2019	2020	Structural	Window removal and replacement	$119,028	N/A	N/A	N/A	N/A	N/A	N/A

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Administrative Offices	Pape Avenue Multiuse Building	126 Pape Ave.	2019	2020	Structural	Replacement of three lower roofs	$199,680	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Property Dept Workshop	786 Dundas St. E	2022	2023	Mechanical	Replace existing heating boiler in west basement boiler room	$189,347	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Property Dept Workshop	786 Dundas St. E	2023	2024	Structural	Replace rooftop monitor windows	$87,493	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Public Health Building	175 Memorial Park Ave.	2019	2020	Structural	Rehabilitation of exterior walls	$46,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Public Health HQ	277 Victoria St.	2023	2024	Mechanical	Replace gas-fired domestic hot water boiler	$41,564	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Public Health HQ	277 Victoria St.	2023	2024	Mechanical	Replace service area exhaust fans	$61,044	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Public Health HQ	277 Victoria St.	2023	2024	Mechanical	Replace existing fresh air make-up unit	$264,030	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Scarborough Civic Centre	150 Borough Dr.	2022	2023	Electrical	Replace original power distribution equipment	$317,623	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Scarborough Civic Centre	150 Borough Dr.	2020	2021	Mechanical	Replace one gas-fired hot water heating boiler	$408,095	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Scarborough Civic Centre	150 Borough Dr.	2020	2021	Mechanical	Replace cooling tower, piping, and controls	$848,128	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Scarborough Civic Centre	150 Borough Dr.	2023	2024	Structural	Replace exterior metal siding and flashing	$283,547	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	St Lawrence Hall	157 King St. E	2022	2023	Mechanical	Replace Great Hall air handling unit AC-3	$352,181	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	St Lawrence Hall	157 King St. E	2019	2020	Structural	Replacement of flat roofing	$52,976	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	St Lawrence Hall	157 King St. E	2019	2021	Structural	Restoration of stone and masonry facade	$652,497	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	St Lawrence Hall	157 King St. E	2019	2021	Structural	Replacement of exterior windows, main door, and overhead door	$1,752,486	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	Wellesley Jarvis Office	111 Wellesley St. E.	2019	2019	Mechanical	Replace heat pump (1st & 2nd floors)	$250,000	N/A	N/A	N/A	N/A	N/A	N/A
Administrative Offices	York Civic Centre	2700 Eglinton Ave. W	2017	2019	Electrical	LED lighting	$271,221	N/A	N/A	199,120	N/A	N/A	$16,345
Administrative Offices	York Civic centre	2700 Eglinton Ave. W	2023	2024	Structural	Exterior wall rehabilitation	$627,070	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Ambulance Headquarters	4330 Dufferin St.	2019	2019	Mechanical	Replacement of chiller and cooling tower with split systems	$500,000	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Ambulance Headquarters	4330 Dufferin St.	2019	2019	Mechanical	Replacement of two 5 ton Liebert units for cooling server rooms	$250,000	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Ambulance Headquarters	4330 Dufferin St.	2021	2023	Mechanical	Replace air make-up Unit #1 on main garage roof	$98,566	N/A	N/A	N/A	N/A	N/A	N/A

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Ambulance Stations	EMS Workshop West	866 Richmond St. W	2018	2019	Electrical	Building-wide LED lighting retrofit	$4,375	N/A	$321	N/A	N/A	N/A	$834
Ambulance Stations	Station #11	1135 Caledonia Rd	2018	2019	Electrical	Building-wide LED lighting retrofit	$20,650	N/A	$1,033	N/A	N/A	N/A	$1,107
Ambulance Stations	Station #12	1535 Albion Rd.	2019	2020	Structural	Exterior wall rehabilitation	$51,000	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #12	1535 Albion Rd.	2019	2020	Structural	Window replacement	$62,000	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #12	1535 Albion Rd.	2019	2019	Structural	Exterior and overhead door replacement	$73,139	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #12	1535 Albion Rd.	2018	2019	Electrical	Building-wide LED lighting retrofit	$8,175	N/A	$409	N/A	N/A	N/A	$520
Ambulance Stations	Station #13	555 Martin Grove Rd	2018	2019	Electrical	Building-wide LED lighting retrofit	$16,175	N/A	$809	N/A	N/A	N/A	$962
Ambulance Stations	Station #18	643 Eglinton Ave. W	2018	2019	Electrical	Building-wide LED lighting retrofit	$22,025	N/A	$1,101	N/A	N/A	N/A	$1,636
Ambulance Stations	Station #21	887 Pharmacy Ave.	2018	2019	Electrical	Building-wide LED lighting retrofit	$16,425	N/A	$821	N/A	N/A	N/A	$832
Ambulance Stations	Station #22	3100 Eglinton Ave. E	2018	2019	Electrical	Building-wide LED lighting retrofit	$11,450	N/A	$573	N/A	N/A	N/A	$692
Ambulance Stations	Station #24	3061 Birchmount Rd.	2020	2021	Structural	Window replacement	$78,311	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #24	3061 Birchmount Rd.	2018	2019	Electrical	Building-wide LED lighting retrofit	$11,400	N/A	$570	N/A	N/A	N/A	$967
Ambulance Stations	Station #28	2900 Lawrence Ave. E	2021	2022	Structural	Window replacement	$36,172	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #28	2900 Lawrence Ave. E	2021	2022	Structural	Exterior wall rehabilitation	$60,257	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #28	2900 Lawrence Ave. E	2022	2023	Structural	Main roof replacement	$137,788	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #28	2900 Lawrence Ave. E	2022	2023	Mechanical	Replacement of the domestic hot water heater	$51,040	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #28	2900 Lawrence Ave.E	2018	2019	Electrical	Building-wide LED lighting retrofit	$21,300	N/A	$1,065	N/A	N/A	N/A	$1,269
Ambulance Stations	Station #30	100 Turnberry Ave.	2018	2019	Electrical	Building-wide LED lighting retrofit	$76,650	N/A	$3,833	N/A	N/A	N/A	$6,401
Ambulance Stations	Station #31	4219 Dundas St. W	2018	2019	Electrical	Building-wide LED lighting retrofit	$15,275	N/A	$764	N/A	N/A	N/A	$982
Ambulance Stations	Station #32	9 Clendenan Ave.	2018	2019	Electrical	Building-wide LED lighting retrofit	$12,280	N/A	$643	N/A	N/A	N/A	$583
Ambulance Stations	Station #33	760 Dovercourt Rd.	2018	2019	Electrical	Building-wide LED lighting retrofit	$13,875	N/A	$694	N/A	N/A	N/A	$774
Ambulance Stations	Station #34	674 Markham St.	2019	2019	Structural	Masonry restorations (phase II)	$100,000	N/A	N/A	N/A	N/A	N/A	N/A

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Ambulance Stations	Station #34	674 Markham St.	2018	2019	Electrical	Building-wide LED lighting retrofit	$35,675	N/A	$1,784	N/A	N/A	N/A	$2,459
Ambulance Stations	Station #37	1288 Queen St. W	2020	2021	Electrical	Replacement of lighting panels and disconnects	$73,978	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #37	1288 Queen St. W	2018	2019	Electrical	Building-wide LED lighting retrofit	$15,725	N/A	$786	N/A	N/A	N/A	$681
Ambulance Stations	Station #38	259 Horner Ave.	2018	2019	Electrical	Building-wide LED lighting retrofit	$32,100	N/A	$1,605	N/A	N/A	N/A	$3,519
Ambulance Stations	Station #40	58 Richmond St. E	2018	2019	Electrical	Building-wide LED lighting retrofit	$49,450	N/A	$2,473	N/A	N/A	N/A	$3,920
Ambulance Stations	Station #41	1300 Pape Ave.	2018	2019	Electrical	Building-wide LED lighting retrofit	$24,350	N/A	$1,218	N/A	N/A	N/A	$1,374
Ambulance Stations	Station #42	1535 Kingston Rd.	2019	2019	Structural	Windows and exterior door replacement	$169,049	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #42	1535 Kingston Rd.	2018	2019	Electrical	Building-wide LED lighting retrofit	$42,525	N/A	$2,126	N/A	N/A	N/A	$4,192
Ambulance Stations	Station #45	135 Davenport Rd.	2020	2021	Mechanical	Replace one humidification system	$31,572	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #46	105 Cedarvale Ave.	2019	2019	Structural	Exterior wall rehabilitation	$43,933	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #46	105 Cedarvale Ave.	2019	2019	Structural	Window replacement	$27,442	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #46	105 Cedarvale Ave.	2019	2019	Structural	Exterior & overhead door Replacement	$43,258	N/A	N/A	N/A	N/A	N/A	N/A
Ambulance Stations	Station #47	3600 St. Clair Ave. E	2018	2019	Electrical	Building-wide LED lighting retrofit	$10,375	N/A	$519	N/A	N/A	N/A	$569
Ambulance Stations	Station #54	4135 Bathurst St.	2018	2019	Electrical	Building-wide LED lighting retrofit	$22,300	N/A	$1,115	N/A	N/A	N/A	$1,883
Animal Centres	East Animal Centre	821 Progress Ave.	2023	2024	Structural	Exterior window glazing replacement	$100,832	N/A	N/A	N/A	N/A	N/A	N/A
Animal Centres	East Animal Centre	821 Progress Ave.	2023	2024	Structural	Wood Fascias and Soffit, Roof Skylights and Eaves troughs/Downspouts	$184,030	N/A	N/A	N/A	N/A	N/A	N/A
Animal Centres	West Animal Centre	146 The East Mall	2022	2023	Mechanical	Gas fired unit heater replacement in the garage	$24,135	N/A	N/A	N/A	N/A	N/A	N/A
Animal Centres	West Animal Centre	146 The East Mall	2022	2023	Structural	Exterior cladding rehabilitation	$147,657	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Burrows Hall Community Complex	1081 Progress Ave.	2020	2020	Structural	Roof rehabilitation	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	East Scarborough Boys and Girls Club	100 Galloway Rd.	2023	2024	Mechanical	Replace Existing Rooftop HVAC Unit #3 & Humidifier #3	$94,591	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Eastview Neighbourhood Community Centre	86 Blake St.	2019	2019	Structural	Replacement of Three Modified Bituminous Roof Levels	$481,261	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Eastview Neighbourhood Community Centre	86 Blake St.	2019	2020	Mechanical	Replacement of Approx. 17 VAV Terminals	$148,856	N/A	N/A	N/A	N/A	N/A	N/A

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Community Centres	Eastview Neighbourhood Community Centre	86 Blake St.	2022	2023	Electrical	Replacement of Existing Fire Alarm System (Devices & Wiring)	$167,209	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Fairfield Seniors Centre	80 Lothian Ave.	2019	2019	Structural	Roofing assembly with increased insulation	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Flemingdon Community Centre	150 Grenoble Dr.	2024	2024	Structural	Re-roofing	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Islington Senior Centre	4968 Dundas St. W	2019	2019	Structural	Exterior wall rehabilitation	$55,000	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Islington Senior Centre	4968 Dundas St. W	2019	2019	Structural	Exterior windows and doors replacement	$118,000	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Lamp Senior Centre	185 Fifth St.	2019	2019	Structural	Replacement of windows and exterior doors	$182,219	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Lamp Senior Centre	185 Fifth St.	2019	2019	Structural	Exterior wall rehabilitation	$82,000	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Lamp Senior Centre	185 Fifth St.	2023	2024	Structural	Replacement of roofing membranes	$389,475	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	Waterfront Neighbourhood Centre	627 Queens Quay W	2017	2019	Electrical	Building-wide LED lighting retrofit	$216,948	N/A	$8,512	204,222	N/A	N/A	$30,021
Community Centres	West Scarborough N.C.	313 Pharmacy Ave.	2021	2022	Mechanical	Replace existing domestic hot water storage tank	$57,356	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	West Scarborough N.C.	313 Pharmacy Ave.	2021	2022	Mechanical	Replace existing hot water heating boiler & draft inducer	$97,074	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	West Scarborough N.C.	313 Pharmacy Ave.	2021	2022	Mechanical	Replace existing second floor HVAC unit	$103,969	N/A	N/A	N/A	N/A	N/A	N/A
Community Centres	West Scarborough N.C.	313 Pharmacy Ave.	2022	2023	Mechanical	Replace existing pool rooftop HVAC unit	$139,310	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	Cedar Ridge Creative Centre	225 Confederation Dr.	Oct-19	Nov-19	Electrical	Replacement of interior T12/T8 fluorescent lighting with LED lighting	$20,000	N/A	N/A	5%-10%	N/A	N/A	N/A
Cultural Facilities	Gibson House Museum	5172 Yonge St.	Jul-19	Oct-19	Electrical	Replace interior T12/T8 lighting with LED lighting	$3,000	N/A	N/A	15%-20%	N/A	N/A	N/A
Cultural Facilities	Historic Fort York	100 Garrison Rd.	Jan-19	Mar-19	Electrical	Replace interior compact fluorescent/fluorescent lighting with LED lighting	$5,000	N/A	N/A	10%-15%	N/A	N/A	N/A
Cultural Facilities	Lakeshore Assembly Hall	1 Colonel Samuel Smith Park Dr.	Jun-19	Sep-19	Mechanical	Install building automation system for HVAC. Original system is from 2002.	$50,000	N/A	N/A	5%-10%	5%-10%	N/A	N/A
Cultural Facilities	Lakeshore Assembly Hall	1 Colonel Samuel Smith Park Dr.	Jun-19	Sep-19	Mechanical	Replace 2002 York 50 ton chiller	$100,000	N/A	N/A	10%-15%	10% - 15%	N/A	N/A
Cultural Facilities	Neilson Park Creative Centre	56 Neilson Dr.	21-May	Jun-21	Mechanical	Replace rooftop 5 York HVAC units	$100,000	N/A	N/A	10%-15%	10%-15%	N/A	N/A
Cultural Facilities	Riverdale Farm	201 Winchester St.	2020	2020	Structural	Addition of foundation insulation, energy efficient windows, energy efficient exterior lighting	TBD	N/A	N/A	N/A	N/A	N/A	N/A

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Cultural Facilities	Spadina House Museum	285 Spadina Rd.	Jun-19	Jul-19	Electrical	Replace interior incandescent/fluorescent lighting with LED lighting	$1,000	N/A	N/A	3%-5%	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2019	2019	Electrical	Heritage Lighting Installation	$450,000	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2021	2022	Electrical	Replacement of Electrical Distribution Equipment - 2014	$72,168	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2021	2022	Electrical	Replacement of Tenant Distribution Equipment - 2014	$361,681	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2022	2023	Mechanical	Replace Common Area Washrooms Exhaust Fans	$38,478	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2022	2023	Mechanical	Replace Exhaust Fans	$236,877	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2022	2024	Structural	Replacement of Exterior Doors and Windows	$3,862,446	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2023	2024	Structural	Overhead Door Replacement	$91,102	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	St Lawrence Market South	91 Front St. W	2023	2024	Structural	Roof Replacement	$3,134,561	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Facilities	Tormorden Mills	67 Pottery Rd.	Jan-20	Mar-20	Electrical	Replace interior halogen lighting and lutron system with LED lighting system	$8,000	N/A	N/A	15%-20%	N/A	N/A	N/A
Cultural Facilities	Tormorden Mills	67 Pottery Rd.	May-21	Jun-21	Mechanical	Replace rooftop 6 York HVAC units	$125,000	N/A	N/A	10%-15%	10%-15%	N/A	N/A
Fire Stations	Fire Services - East Command Offices	3 Dohme Ave.	2022	2023	Mechanical	Replacement of nine existing Rooftop HVAC Systems and Controls	$272,919	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Services - East Command Offices	3 Dohme Ave.	2023	2024	Mechanical	Replacement of domestic hot water heater, unit heaters, exhaust fans, humidifier, piping, and controls	$134,785	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 112	5700 Bathurst St.	2021	2022	Mechanical	Replace five roof exhaust fans	$66,993	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 112	5700 Bathurst St.	2021	2022	Mechanical	Replace three gas-fired roof top HVAC units	$242,000	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 114	12 Canterbury Pl.	2022	2023	Structural	Window and exterior door replacement	$86,021	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 115	115 Parkway Forest Dr.	2019	2019	Structural	Replace exterior doors and windows	$69,000	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 115	115 Parkway Forest Dr.	2019	2019	Electrical	Replace emergency lighting system and exit signs	$20,000	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 115	115 Parkway Forest Dr.	2020	2021	Mechanical	Replacement of heating/AC units, gas-fired garage heaters, and upgrade front entrance heating	$133,578	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 122	2545 Bayview Ave.	2019	2019	Mechanical	Install new split system A/C unit	$17,171	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 132	476 Lawrence Ave. W	2023	2024	Mechanical	Domestic hot water heater replacement	$36,560	N/A	N/A	N/A	N/A	N/A	N/A

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Fire Stations	Fire Station 142	2753 Jane St.	2021	2022	Mechanical	Replace one gas-fired roof top unit	$67,662	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 143	1009 Sheppard Ave. W	2021	2022	Structural	replace insulated glass unit and sealant	$83,594	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 143	1010 Sheppard Ave. W	2021	2022	Structural	Replace metal cladding	$153,441	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 145	20 Beffort Rd.	2021	2022	Electrical	Interior lighting replacement	$82,161	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 145	20 Beffort Rd.	2023	2024	Mechanical	Replace gas-fired domestic water heater	$42,541	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 211	900 Tapscott Rd.	2021	2022	Electrical	Replace Emergency Lighting	$22,747	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 211	900 Tapscott Rd.	2020	2021	Mechanical	Replace Gas-Fired Domestic Water Heater	$26,285	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 213	7 Lapsley Rd.	2022	2023	Electrical	Replace exterior lighting	$24,474	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 213	7 Lapsley Rd.	2022	2023	Electrical	Replace emergency lighting system and exit signs	$20,024	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 213	7 Lapsley Rd.	2022	2023	Mechanical	Replace furnace with cooling coil and humidifier	$40,048	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 213	7 Lapsley Rd.	2022	2023	Electrical	Replace primary/secondary distribution	$62,297	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 215	5318 Lawrence Ave. E	2022	2023	Electrical	Replace emergency lighting system and exit Signs	$23,362	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 215	5318 Lawrence Ave. E	2022	2023	Electrical	Primary/secondary distribution replacement	$71,256	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 222	755 Warden Ave.	2022	2023	Mechanical	Replace unit heaters	$38,936	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 222	755 Warden Ave.	2022	2023	Mechanical	Replace air handling unit	$65,634	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 222	755 Warden Ave.	2022	2023	Mechanical	Replace heating boiler	$99,010	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 223	116 Dorset Rd.	2020	2021	Electrical	Replace exterior lighting	$23,203	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 226	85 Main St.	2019	2019	Structural	Replace Shingled Roofing	$188,400	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 227	1904 Queen St. E	2019	2020	Structural	Windows and exterior door replacement	$296,475	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 233	59 Curlew Dr.	2022	2023	Structural	Replace roofing	$334,372	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 233	59 Curlew Dr.	2022	2023	Mechanical	Replace through-wall exhaust units	$43,386	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 233	59 Curlew Dr.	2022	2023	Mechanical	Replace domestic water heater	$22,250	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 233	59 Curlew Dr.	2022	2023	Electrical	Replace emergency lighting	$35,599	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 233	59 Curlew Dr.	2022	2023	Electrical	Exterior lighting replacement	$29,408	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 234	40 Coronation Dr.	2023	2024	Electrical	Primary/Secondary distribution replacement	$118,107	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 241	3325 Warden Ave.	2020	2021	Structural	Replace roofing systems	$144,505	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 243	4560 Sheppard Ave. E	2020	2021	Structural	Replace roofing systems	$138,082	N/A	N/A	N/A	N/A	N/A	N/A

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Fire Stations	Fire Station 245	1600 Birchmount Rd.	2021	2022	Mechanical	Replace gas-fired domestic hot water heater	$40,408	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 245	1600 Birchmount Rd.	2021	2022	Mechanical	Replace two gas-fired boilers, three hot water circulation pumps, and controls	$120,497	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 245	1600 Birchmount Rd.	2019	2019	Electrical	Replace primary/secondary distribution	$61,899	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 313	441 Bloor St. E	2023	2024	Structural	Rehabilitation of exterior walls	$169,089	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 313	441 Bloor St. E	2023	2024	Structural	Replace exterior pedestrian doors and windows	$331,040	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 313	441 Bloor St. E	2023	2024	Mechanical	Air conditioning unit replacement	$14,852	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 315	132 Bellevue Ave.	2020	2021	Mechanical	Replace hot water and electric unit heaters	$91,852	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 322	256 Cosburn Ave.	2019	2020	Structural	Repair of exterior block walls	$26,000	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 331	31 Claremount St.	2019	2020	Structural	Replace flat roofing	$203,000	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 335	235 Cibola Ave.	2019	2019	Mechanical	Apparatus bay exhaust system replacement	$35,812	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 343	65 Hendrick Ave.	2019	2020	Structural	Rehabilitation of exterior walls	$296,965	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 344	240 Howland Ave.	2019	2019	Structural	Replace shingled roofing	$204,828	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 344	240 Howland Ave.	2019	2019	Structural	Foundation wall waterproofing	$196,804	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 344	240 Howland Ave.	2019	2019	Structural	Replace flat roofing	$220,800	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 424	462 Runnymede Rd.	2023	2024	Mechanical	Domestic hot water heater replacement	$36,560	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 425	83 Deforest Rd.	2021	2022	Mechanical	Domestic Hot Water Heater Replacement	$23,830	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 431	308 Prince Edward Dr.	2019	2020	Structural	Replace shingle roofing	$55,000	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 432	155 The East Mall	2019	2020	Structural	Exterior wall rehabilitation	$102,700	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 433	615 Royal York Rd.	2022	2023	Structural	Rehabilitation of exterior brick walls	$32,260	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	Fire Station 435	130 Eighth St.	2019	2020	Structural	Rehabilitation of exterior walls	$284,400	N/A	N/A	N/A	N/A	N/A	N/A
Greenhouses	Allan Gardens Conservatory	160 Gerrard St. E	2020	TBD	Mechanical	Replacement of two boilers with energy efficient models	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Rec Facilities	Centennial Rec Centre (Ice Galaxy)	1967 Ellesmere Rd.	2019	TBD	Structural	Arena SOGR Rehabilitation	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Rec Facilities	Centennial Rec Centre (Ice Galaxy)	1967 Ellesmere Rd.	2023	TBD	Structural	Replacement roofing	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Sports Arenas	Bayview Arena	3230 Bayview Ave.	2023	TBD	Mechanical/Structural	Building envelope, roofing, mechanical system	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Sports Arenas	Fenside Arena	30 Slidell Cres.	2021	TBD	Structural	Roof replacement including insulation	TBD	N/A	N/A	N/A	N/A	N/A	N/A

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Indoor Sports Arenas	Phil White Arena	433 Arlington Ave.	2022	TBD	Mechanical/Structural	Flooring, Dasher Boards, Refrigeration, HVAC, Building Envelope	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	Main Square Community Centre	245 Main St.	2019	TBD	Structural	Roof rehabilitation	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	Norseman Community Centre & Pool	105 Norseman St.	2019	TBD	Structural	Rehabilitation building envelope and roof	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	Scadding Court Community Centre	707 Dundas St. W	2022	2023	Mechanical	Replace valves for perimeter, entrance heaters & fan coil units	$250,094	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	St. Albans Boys Club	843 Palmerston Ave.	2020	2021	Electrical	Replacement of Main Switch and Splitter	$43,527	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	University Settlement House R.C.	23 Grange Rd.	2020	2021	Mechanical	Replace domestic hot water heater DHWH-1	$18,497	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	University Settlement House R.C.	23 Grange Rd.	2020	2021	Mechanical	Replace control air compressor and controls	$18,655	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	University Settlement House R.C.	23 Grange Rd.	2020	2021	Mechanical	Replace kitchen exhaust hood fan and controls	$27,886	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	University Settlement House R.C.	23 Grange Rd.	2020	2021	Mechanical	Replace washroom exhaust fan and controls	$28,047	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	University Settlement House R.C.	23 Grange Rd.	2022	2023	Structural	Replace roofing system on swimming pool area & over main entrance	$266,222	N/A	N/A	N/A	N/A	N/A	N/A
Indoor Swimming Pools	University Settlement House R.C.	23 Grange Rd.	2022	2023	Structural	Replace upper roof areas	$448,426	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Bendale Acres	2920 Lawrence Ave. E	Aug-19	Jun-20	Electrical	Electrical Upgrades	$2,000,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Bendale Acres	2920 Lawrence Ave. E	Aug-19	Jun-20	Mechanical	Mechanical Upgrades	$2,500,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Bendale Acres	2920 Lawrence Ave. E	Oct-18	Oct-19	Mechanical	HVAC upgrade	$1,500,000	N/A	N/A	$70,000	N/A	N/A	N/A
Long-Term Care Homes	Bendale Acres	2920 Lawrence Ave. E	Aug-18	Jun-19	Structural	Exterior glazing replacement	$1,200,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Cummer Lodge	205 Cummer Ave.	Jun-19	Oct-19	Mechanical	Mechanical piping insulation replacement	$450,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Cummer Lodge & Seven Oaks	205 Cummer Ave. & 9 Neilson Rd.	Jun-19	Dec-19	Mechanical	Food service upgrades	$500,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Lakeshore Lodge	3197 Lakeshore Blvd.	Jul-19	Feb-20	Mechanical	Kitchen Upgrades	$1,000,000	N/A	N/A	N/A	N/A	N/A	N/A
Long-Term Care Homes	Wesburn Manor & True Davidson Acres	400 The West Mall & 200 Dawes Rd.	Jun-19	Oct-19	Structural	Roofing replacements	$2,400,000	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	#13 Police Division	1435 Eglinton Ave. W	2021	2022	Electrical	Replacement of electrical service and distribution	$217,548	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	#14 Police Division	350 Dovercourt Rd.	2019	2019	Electrical	Re-lamping to T8 LED lamps	$74,638	N/A	$9,984	N/A	N/A	N/A	$44,209

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Police Stations	#42 Police Division	242 Milner Ave.	2019	2020	Mechanical	Replace cooling tower, piping, and controls	$303,613	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	#51 Police Division New	51 Parliament St.	2019	2019	Structural	Re-finish exterior heritage windows	$187,121	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Forensic Service, Store, & Garage	2050 Jane St.	2019	2020	Structural	Roof replacement	$1,116,535	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Forensic Service, Store, & Garage	2050 Jane St.	2023	2024	Structural	Building B - Roof Replacement	$1,236,914	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Intelligence Bureau	30 Upjohn St.	2019	2019	Structural	Re-roofing	$2,154,367	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Intelligence Bureau	30 Upjohn St.	2019	2019	Mechanical	Replace five roof mounted exhaust fans	$63,399	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Academy	70 Birmingham Rd.	2019	2019	Electrical	Re-lamping to T8 LED lamps	$241,696	N/A	$38,040	N/A	N/A	N/A	$241,696
Police Stations	Police Garage	18 Cranfield Rd.	2019	2019	Electrical	Replace existing fixtures and bulbs to LED	$36,846	N/A	$8,369	N/A	N/A	N/A	$36,846
Police Stations	Police Headquarters	40 College St.	2019	2019	Mechanical	Domestic water booster pump set	$98,000	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Headquarters	40 College St.	2019	2019	Structural	Replace bitumen roofing	$1,514,000	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Headquarters	40 College St.	2020	2021	Electrical	Refurbishment of power transformers	$469,000	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Police Headquarters	40 College St.	2019	2020	Structural	Recaulk exterior cladding panels (South Elevation)	$440,000	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Property Bureau	799 Islington Ave.	2019	2019	Mechanical	Replace Three (3) WH Area RTU-1,3 & 4	$206,023	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Property Bureau	799 Islington Ave.	2019	2019	Structural	Re-Parging of Foundation Walls	$17,741	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Property Bureau	799 Islington Ave.	2019	2019	Structural	Rehabilitation of Exterior Brick Masonry Facade	$137,349	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Property Bureau	799 Islington Ave.	2019	2019	Mechanical	Replace Front Office Rooftop HVAC Unit: RTU-6	$83,697	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Property Bureau	799 Islington Ave.	2019	2019	Structural	Replace Tarp Roofing and Cladding	$61,520	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Property Bureau	799 Islington Ave.	2019	2019	Mechanical	Replace Gun Storage & Office Rooftop Unit:RTU-7 &8	$105,632	N/A	N/A	N/A	N/A	N/A	N/A
Police Stations	Property Evidence Unit	330 Progress Ave.	2019	2020	Mechanical	Air handling unit replacement	$220,000	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Albert Campbell District	496 Birchmount Rd.	TBD	TBD	Electrical/Mechanical /Structural	Renovation of an existing building with all new building systems/technology and building envelope improvements	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Bayview	2901 Bayview Ave.	TBD	TBD	Electrical/Mechanical /Structural	Relocation and expansion to a shared facility with all new building system	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Centennial	578 Finch Ave. W	TBD	TBD	Electrical/Mechanical /Structural	Demolition of existing building and construction of a net-zero large building	TBD	N/A	N/A	N/A	N/A	N/A	N/A

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Public Libraries	Dawes Road	416 Dawes Rd.	TBD	TBD	Electrical/Mechanical/Structural	Demolition of existing building and construction of a new library	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Guildwood	123 Guildwood Pkwy.	TBD	TBD	Electrical/Mechanical/Structural	Renovation and expansion of leased premises with new lighting systems	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	North York Central	5120 Yonge St.	TBD	TBD	Electrical/Mechanical/Structural	Renovation with new HVAC controls, LED lighting, and new chillers	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Northern District	40 Orchard View Blvd.	TBD	TBD	Electrical/Mechanical/Structural	Renovation of an existing branch with new HVAC and lighting systems	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	St. Clair Silverthorn	1748 St. Clair Ave. W	TBD	TBD	Electrical/Mechanical/Structural	Demolition of existing building and construction of a new building	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	Wychwood	1431 Bathurst St.	TBD	TBD	Electrical/Mechanical/Structural	Renovation and expansion with all new building systems	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Public Libraries	York Woods	1785 Finch Ave. W	TBD	TBD	Electrical/Mechanical/Structural	Renovation and expansion of an existing building with all new building systems/technology and building envelope improvements	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Bering Yard	320 Bering Ave.	2022	2023	Mechanical	Replace the rooftop heating and air conditioning unit	$110,533	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Disco Yard - Office Building No. 100	150 Disco Rd.	2023	2024	Mechanical	Replace two rooftop 5-ton & 7.5-ton A/C units	$85,394	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Disco Yard - Office Building No. 101	150 Disco Rd.	2022	2023	Electrical	Electrical Distribution Upgrades for Buildings, 100,101,102 & 103	$661,771	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Disco Yard - Office Building No. 101	150 Disco Rd.	2022	2023	Mechanical	Replace rooftop A/C units - # 1, 3, and 4	$214,105	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Disco Yard - Office Building No. 101	150 Disco Rd.	2023	2024	Mechanical	Replace rooftop A/C units - # 2,5, and 7	$216,718	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Eastern & Booth Blocks	433 Eastern Ave.	2019	2020	Mechanical	Heating boiler replacement	$116,000	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Eastern & Booth Blocks	433 Eastern Ave.	2019	2020	Mechanical	Rooftop unit replacements	$215,000	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Eastern Ave Yard/Office	843 Eastern Ave.	2019	2020	Mechanical	Replace Garage Six Rooftop SA Units :RTU-4 to 9	$381,327	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Eastern Ave Yard/Office	843 Eastern Ave.	2023	2024	Structural	Replacement of garage windows and exterior doors	$3,881,262	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Eglinton Flats Service Building	101 Emmett Ave.	2022	TBD	Electrical/Mechanical	Energy efficient lighting, energy efficient heating and ventilation	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Ellesmere Yard	2020 Midland Ave.	2019	2019	Structural	Re-roofing and east elevation masonry	$800,000	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Ellesmere Yard - Building D	1050 Ellesmere Rd.	2023	2024	Mechanical	Replace rooftop units, A/C #1, 2, 3, 4 and 5 - Building "D"	$197,210	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Finch Yard - Building A	1026 Finch Ave. W	2019	2019	Structural	Masonry restoration/repairs	$29,000	N/A	N/A	N/A	N/A	N/A	N/A

Operational Group	Location	Address	Start Date	Completion Date	Project Type	Project Description	Project Cost	Incentives		Projected Annual Energy Savings			
								Source	Amount	Electricity (kWh)	Natural Gas (m^3)	Water (m^3)	Cost
Storage Facilities	Finch Yard - Building D	1026 Finch Ave. W	2019	2019	Mechanical	Replace heating boiler, baseboard heaters, and thermostats	$94,000	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Nashdene Yard	70 Nashdene Rd.	2019	2020	Mechanical	bio-mass boiler centre	$136,500	N/A	N/A	48,000	N/A	N/A	$7,056
Storage Facilities	Northline Parks and Garage	30 Northline Rd.	2023	TBD	Mechanical/Structural	Roofing, replacement of hot water heater	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Oriole Parks Yard	2747 Old Leslie St.	2023	TBD	Structural	Re-roofing	TBD	N/A	N/A	N/A	N/A	N/A	N/A
Storage Facilities	Oriole Yard	2751 Old Leslie St.	2021	2022	Electrical	Retrofit lighting system and emergency lighting	$96,050	N/A	N/A	N/A	N/A	N/A	N/A

*Project includes non-energy efficiency measures