2019

Energy Conservation & Demand Management Plan

Trillium Health Partners

Executive Summary

The purpose of this Energy Conservation and Demand Management (ECDM) Plan is to outline specific actions and measures that will promote good environmental stewardship and community resource management in the years to come. The Plan will accomplish this, in part, by looking at future projections of energy consumption and reviewing past conservation measures.

THP is committed to sustainability and stronger communities. This ECDM outlines how the hospital will reduce overall energy consumption, operating costs and greenhouse gas emissions. By following the measures outlined in this document, we will be able to provide compassionate service to more people in the community. This ECDM Plan is written in accordance with sections 4, 5, and 6 of the recently amended Electricity Act, 1998, O. Reg. 507/18.

Through past conservation and demand initiatives, THP has achieved the following results since 2013:

- 1,661,931 m_3 reduction in natural gas use
- >1% reduction in the organization's total energy use since 2013

Today, utility and energy related costs are a significant part of overall operating costs and planning. In 2018 we achieved:

- An Energy Use Index (EUI) of 62 ekWh/ft^2 which is lower than the Ontario average of 63 ekWh/ft^2
- Energy-related emissions equaled 19,066 tCO_2e

To obtain full value from energy management activities, THP will take a strategic approach by fully integrating energy management into its business decision-making, policies and operating procedures. This active management of energy-related costs and risks will provide a significant economic return and will support other key organizational objectives.

With a prominent focus on energy management, we can expect to achieve the following targets by 2024:

- ~ 2% reduction in electricity consumption
- ~ 10 % reduction in natural gas consumption
- 1,572 tCO_2e reduction of energy-related emissions

Approved By: **Paul Soares**
Director, Facilities, Parking & Security
June 24, 2019

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1. Introduction

In order to obtain full value from energy management activities, and to strengthen our conservation initiatives, a strategic approach must be taken. Our organization will strive to fully integrate energy management into our practices by considering indoor environmental quality, operational efficiency and sustainably sourced resources when making financial decisions. The results and the progress of the past five years, and the projected impact of the new ECDM Plan are presented in the chart & table below.

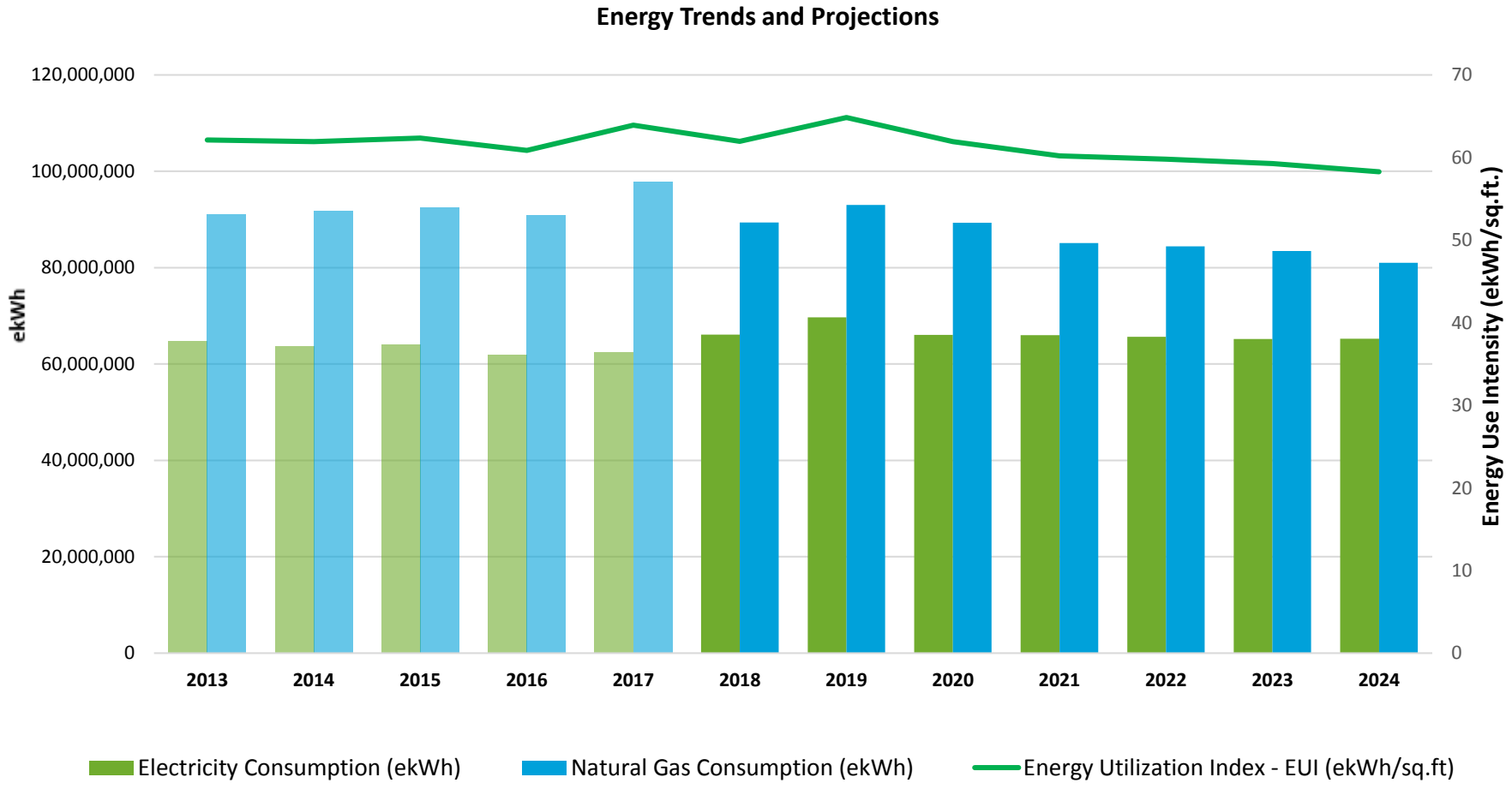


Figure 1. Site-Wide Energy Consumption Trends & Projections

Energy Trends and Projections			
Metric	Energy Use Intensity (ekWh/sq.ft.)	Electricity Consumption (ekWh)	Natural Gas Consumption (ekWh)
2013	62	64,798,988	91,060,747
2014	62	63,647,478	91,755,502
2015	62	64,035,399	92,471,854
2016	61	61,884,234	90,827,754
2017	64	62,485,692	97,908,071
2018	62	66,093,649	89,398,816
2019	65	69,701,606	93,006,773
2020	62	66,040,663	89,316,207
2021	60	65,981,022	85,103,312
2022	60	65,637,388	84,456,210
2023	59	65,201,878	83,482,339
2024	58	65,228,832	80,995,505

Table 1. Site-Wide Energy Consumption Trends & Projections

1.1. Mission, Values

Trillium Health Partners (THP) is a hospital with an outstanding record of performance, fiscal responsibility and quality patient care. The hospital encompasses three main sites – Credit Valley Hospital, Mississauga Hospital, and Queensway Health Centre – all offering a full range of acute care services, as well as a variety of community-based, specialized programs. We are a leading hospital with a focus on providing the best health care for patients today, while helping to build a better future tomorrow. THP encompasses three main locations – Credit Valley Hospital, Mississauga Hospital and Queensway Health Centre - offering a full range of hospital services and specialized programs. We are committed to creating an exceptional experience for everyone who walks through our doors.

Our Mission

A new kind of health care for a healthier community *using scientific expertise, innovative approaches and partnerships*

Our Values

We are committed to enabling, producing and sharing meaningful research and innovation through ***compassion***, ***excellence*** *and* ***courage***

- ***Compassion*** *and inclusion of patients, providers and community*
- ***Excellence*** *in using scientific evidence, system design and evaluation*
- ***Courage*** *to think differently - plan, try, fail, succeed, improve, share*

2. Regulatory Update

O. Reg. 397/11: Conservation and Demand Management Plans legislation was introduced in 2013. Under this regulation, public agencies were required to report on energy consumption and greenhouse gas (GHG) emissions and develop Conservation and Demand Management (CDM) plans the following year.

Until recently, O. Reg. 397/11 was housed under the Green Energy Act, 2009 (GEA). On December 7, 2018, the Ontario government passed Bill 34, Green Energy Repeal Act, 2018. The Bill repealed the GEA and all its underlying Regulations, including O. Reg. 397/11. However, it re-enacted various provisions of the GEA under the Electricity Act, 1998.

As a result, conservation and energy efficiency initiatives, namely CDM plans and broader public sector energy reporting, were re-introduced as amendments to the Electricity Act. The new regulation is now called **O. Reg. 507/18: Broader Public Sector: Energy Conservation and Demand Management Plans (ECDM).**

As of January 1, 2019, O. Reg. 397/11 was replaced by O. Reg. 507/18, and BPS reporting and ECDM plans are under the Electricity Act, 1998 rather than the Green Energy Act, 2009.

3. About Trillium Health Partners

Trillium Health Partners is one of Canada's largest, academically-affiliated health centers, with highly specialized regional programs, and serves over one million residents in Peel, West Toronto and other communities across the province. We envision a new kind of health care for a healthier community – an inter-connected system of care that is organized around the patient, both inside the hospital and beyond its walls. Through partnership, working in a coordinated way across the system, we can meet the needs of our patients and continue to provide outstanding, sustainable quality patient care.

3.1. Site-Wide Historical Energy Intensity

An Energy Utilization Index is a measure of how much energy a facility uses per square foot. By breaking down a facility's energy consumption on a per-square-foot-basis, we can compare facilities of different sizes with ease. In this case, we are comparing our facility to the Ontario hospitals' industry average (derived from Natural Resources Canada's Commercial and Institutional Consumption of Energy Survey), which was found to be **63.23 ekWh/sq. ft.**

Annual Consumption (EUI)						
Site	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Credit Valley Hospital	69	71	70	70	74	71
Mississauga Hospital	68	70	66	63	65	62
Queensway Health Centre	64	59	56	54	52	56
Clinical Administrations Building	21	23	22	21	24	29

Table 2. Historic Energy Utilization Indices for all Sites

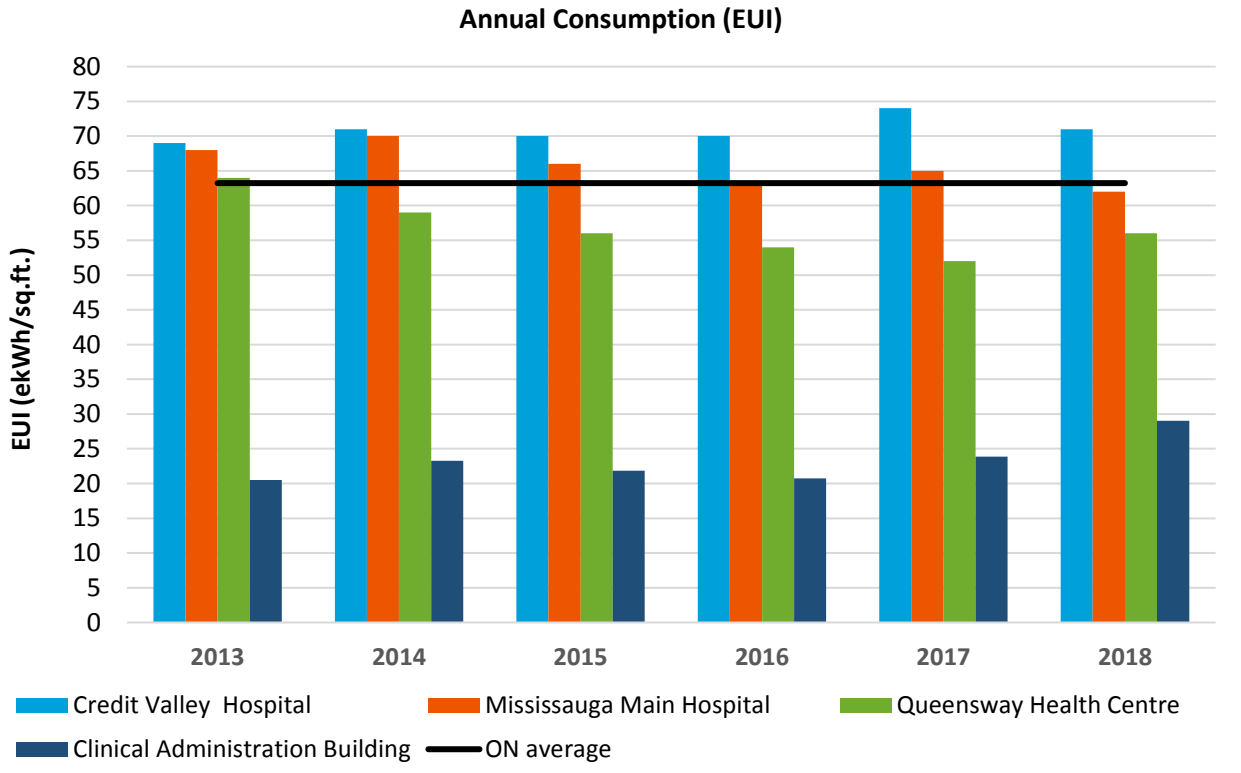


Figure 2. Historic Annual Energy Utilization Indices for all Sites

3.2. Site-Wide Historical GHG Emissions

O.Reg 507.18 requires that THP must report the greenhouse gas (GHG) emissions related to facilities utility consumption. GHG emissions are expressed in terms of equivalent tonnes of Carbon Dioxide (tCO2e). The GHG emissions associated with a facility are dependent on the fuel source — for example, hydroelectricity produces fewer greenhouse gases than coal-fired plants, and light fuel oil produces fewer GHGs than heavy oil.

The GHG Protocol Corporate Standard classifies an organizations GHG emissions into three 'scopes' outlined in Figure 3. Scope 1 represents the direct emissions from sources owned or controlled by THP, and Scope 2 consists of indirect emissions from the consumption of purchased energy generated upstream from the organization (the Ontario grid). Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. Only Scope 1 & 2 emissions are included in the ECDM plan reporting.

Electricity from the Ontario grid is relatively "clean", as the majority is derived from low-GHG hydroelectricity, and coal-fired plants have been phased out. In other jurisdictions, the grid could be more energy intensive if fossil fuels are burnt to produce the electricity. The Scope 1 (natural gas) and Scope 2 (electricity) emissions for THP have been converted to their equivalent tonnes of greenhouse gas emissions in the table on the following page.

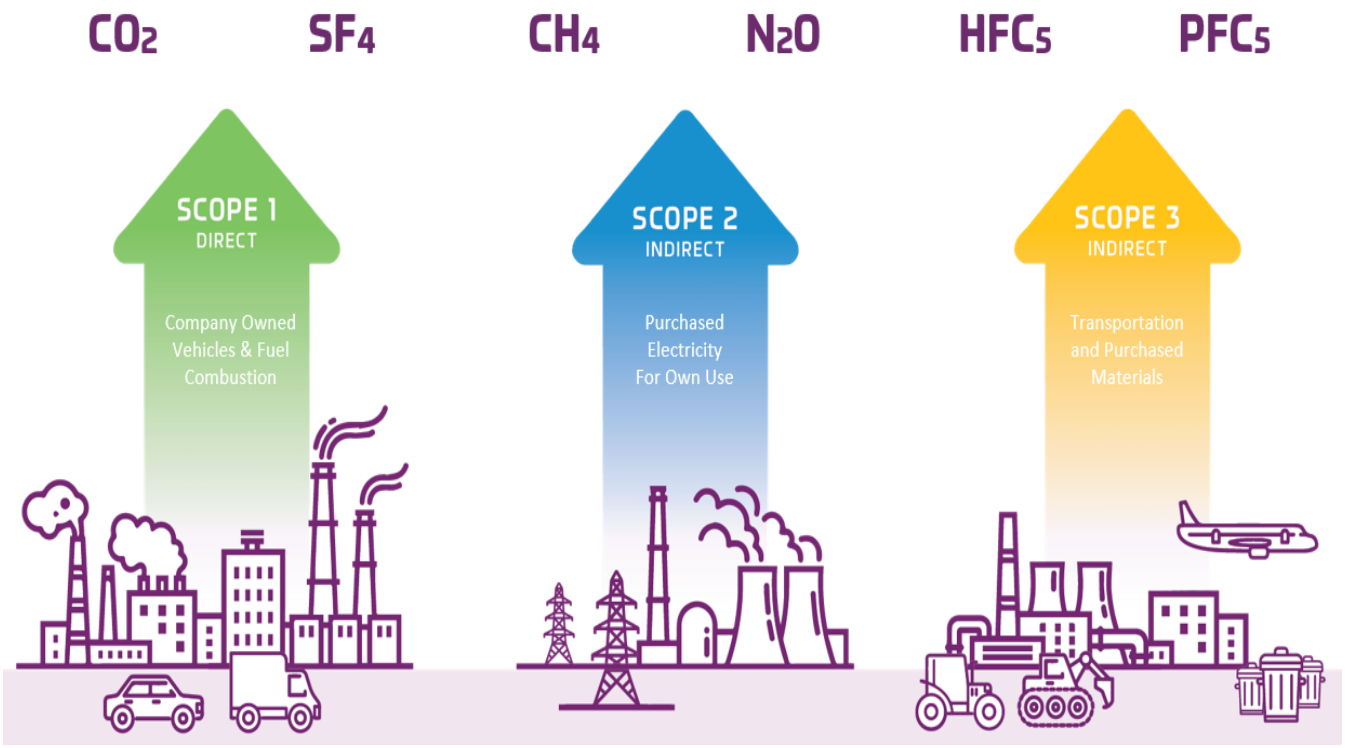


Figure 3. Scope 1, 2 and 3 Emissions

The site-wide greenhouse gas emissions for THP have been tabulated and are represented in the graph and table below:

GHG Emissions	2013	2014	2015	2016	2017	2018
Electricity (scope 2)	2,657	2,610	2,625	2,537	2,562	2,710
Natural Gas (scope 1)	16,661	16,788	16,919	16,618	17,913	16,357
Total	**19,317**	**19,397**	**19,544**	**19,155**	**20,475**	**19,066**

Table 3. Historic Greenhouse Gas Emissions for all Sites

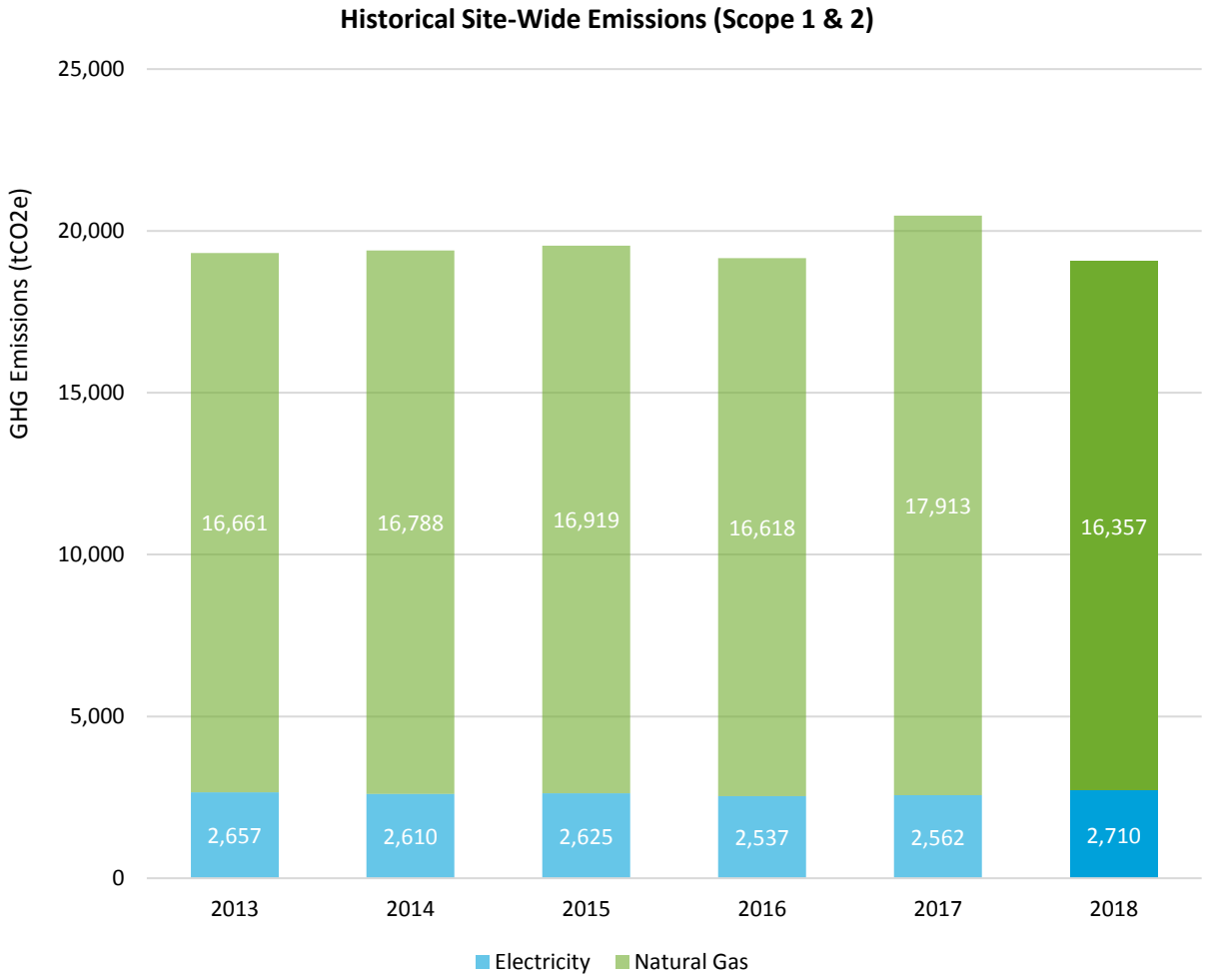


Figure 4. Historic Greenhouse Gas Emissions for all Sites

3.3. Sustainability at Trillium Health Partners

Trillium Health Partners has made a commitment to sustainability and going green. Through events, initiatives and behavior change across all sites, there has been a demonstrated commitment to employee engagement, outreach and education. Trillium has been recognized with multiple awards that highlight this dedication:

- **Booth Centennial Green Award** – recognized for two consecutive years for commitment to using reusable textiles and going green.
- **Green Health Care Award for Energy Efficiency** – recognizes leadership and excellence in reducing health care's environmental impact
- **Energy and Environment Stewardship Award** – recognition for our on-going pledge to environmental sustainability with initiatives in environmental management, energy, waste and employee & community engagement
- **Greening Health Care Leadership Award** – recognized leadership for our pursuit of sustainability and a commitment to all facets of sustainability

Picture 1. Trillium Health Partners Staff Receiving Booth Centennial Green Award

In addition to countless green initiative awards, Trillium has made considerable outreach on a community level. Efforts are regularly evolving in the journey to sustainability. Successes include:

- Transitioned from disposable instrument tray liners to reusable ones
- Launched an *Environmental Awareness Training Program* which details objectives and actions outlining how contractors impact environmental programs
- Conducted annual Earth Day events including participation in Earth Hour
- Installed solar-powered parking meters
- Introduced shuttle bus service between sites to reduce car emissions
- Installed bike racks at all sites
- Implemented security bike patrol on property
- Leveraging the *Partners in Project Green*, launched the *People Power Challenge* to raise staff awareness, initiate their inclusion and solicit their ideas towards achieving our goals
- Participated in a green transportation challenge
- Replace older lighting technologies with energy efficient LED lighting
- Upgraded Building Automation System (BAS) controls

4. Site Analysis

The following section will introduce each of our sites and provide a brief description about buildings, their operations, energy & greenhouse gas (GHG) emissions trends, and specific conservation measures.

4.1. Credit Valley Hospital

Credit Valley Hospital features a regional cancer and ambulatory care centre, a 24-hour emergency care centre, and a regional women's and children's health centre featuring an advanced level 2 neonatal intensive care unit with the largest pediatric oncology satellite program in Ontario outside of the Hospital for Sick Children. Trillium is known for our innovative, can-do approach to providing quality patient care to the people of Mississauga and surrounding regions (approximately one million people).

Facility Information	
Facility Name	**Credit Valley Hospital**
Address	2200 Eglington Avenue W., Mississauga, ON
Gross Area (Sq. Ft)	1,077,376
Facility Use	Healthcare Services
Average Operational Hours Per Week	168
Number of Beds	459
Number of Floors	4

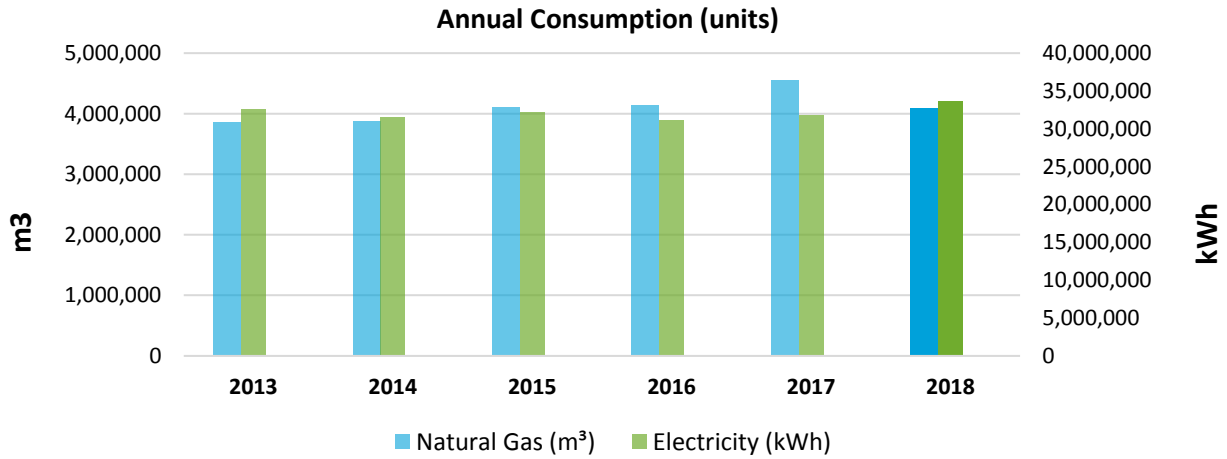
Table 4. Credit Valley Hospital Facility Information

4.1.1. Utility Consumption Analysis

Utilities to the site include electricity and natural gas. The following table summarizes accounts for each utility. Consumption for each respective utility has been adjusted for a regular calendar year (365 days).

Annual Consumption (units)						
Utility	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (kWh)	32,512,544	31,554,303	32,143,148	31,089,286	31,799,259	33,575,990
Natural Gas (m^3)	3,850,654	3,870,883	4,098,492	4,144,434	4,554,179	4,090,110

Table 5. Historic Annual Utility Consumption for the Credit Valley Hospital



4.1.2. GHG Emissions Analysis

Greenhouse gas emissions are calculated based on the energy consumption data analyzed in the following table:

GHG Emissions (tCO2e)						
Utility Source	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (scope 2)	1,333	1,294	1,318	1,275	1,304	1,377
Natural Gas (scope 1)	7,278	7,316	7,746	7,833	8,607	7,730
Totals	**8,611**	**8,610**	**9,064**	**9,108**	**9,911**	**9,107**

Table 6. Historic Annual Greenhouse Gas Emissions for the Credit Valley Hospital

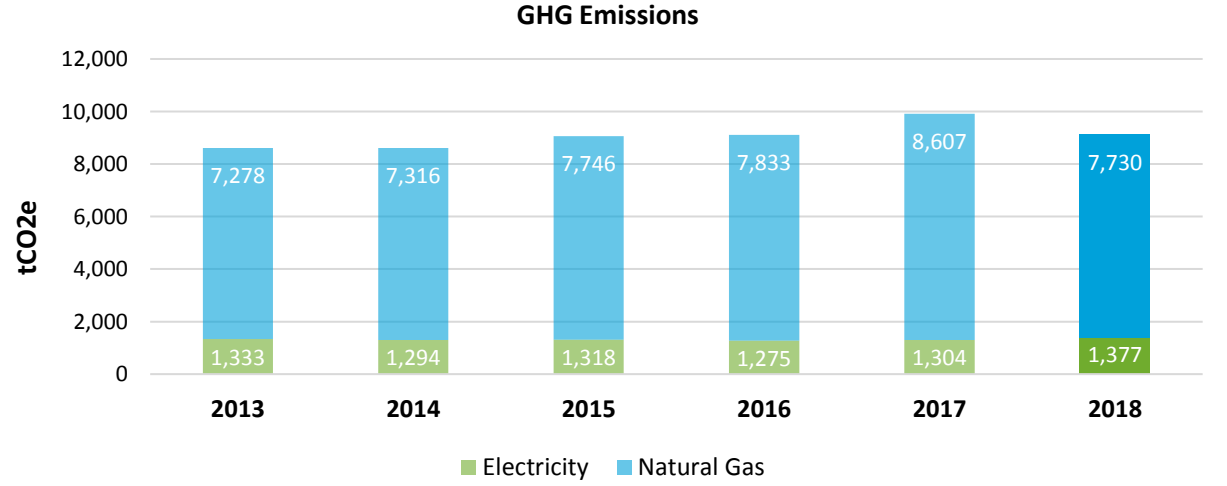


Figure 6. Historic Annual Greenhouse Gas Emissions for the Credit Valley

4.1.3. Proposed Conservation Measures

Our energy analysis has revealed several conservation strategies for the Credit Valley facility. Proposed energy saving initiatives are summarized in the table below outlining targeted utilities. These measures will remain in place until a more efficient and cost-effective technology is found.

Measure	Impacted Utility	Estimated Annual Savings		Simple Payback (years)	Expected Year of Implementation
		kWh	m3		
Reduce Outdoor Air in MAUs	Electricity & Natural Gas	3,283	402,854	1.74	2020
Convert MUA units to MAU	Electricity & Natural Gas	-26,954	240,739	6.02	2023
Continuous Commissioning HVAC equipment	Electricity & Natural Gas	52,986	7,997	6.20	2019
Total		**29,315**	**651,590**		

Table 7. Proposed Conservation Measures for the Credit Valley Hospital

4.1.4. Utility Consumption Forecast

By implementing energy conservation measures stated in the previous section, the forecasted electricity and natural gas use could be forecasted based on the utility savings generated from individual measures. Forecasted utility consumption is tabulated below. The percentage of change is based off of data from the baseline year of 2018.

Annual Consumption												
	2019		2020		2021		2022		2023		2024	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Electricity (kWh)	33,523,004	0.16%	33,519,721	0.17%	33,519,721	0.17%	33,519,721	0.17%	33,546,675	0.09%	33,546,675	0.09%
Natural Gas (m^3)	4,082,113	0.20%	3,679,259	10%	3,679,259	10%	3,679,259	10%	3,438,520	16%	3,438,520	16%

Table 8. Forecast of Annual Utility Consumption for the Credit Valley Hospital

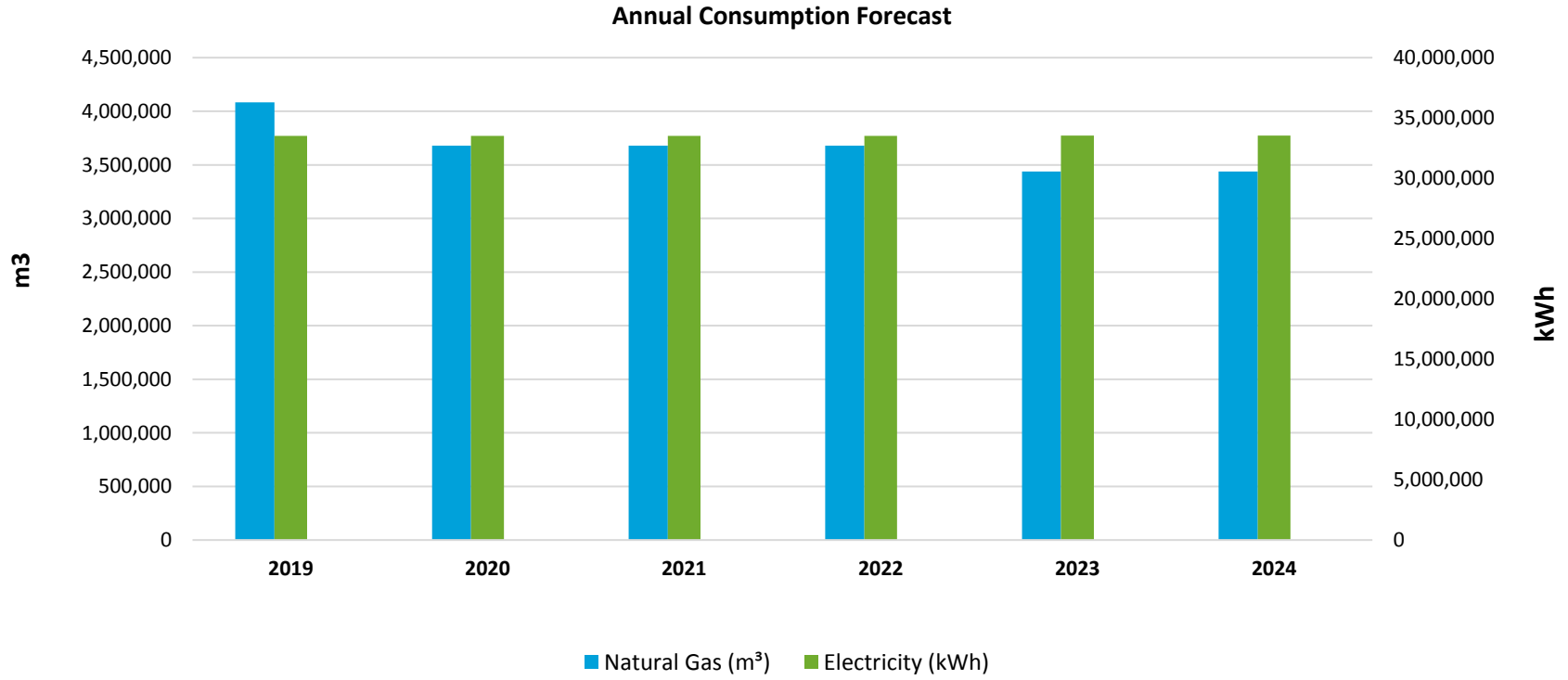


Figure 7. Forecast of Annual Utility Consumption for the Credit Valley Hospital

4.1.5. GHG Emissions Forecast

The forecasted greenhouse gas emissions are calculated based on the forecasted energy consumption data analyzed in the previous section and are tabulated in the following table. Reduction percentages are based off of data from the baseline year of 2018.

GHG Emissions (tCO2e)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	1,374	1,374	1,374	1,374	1,375	1,375
Natural Gas (scope 1)	7,715	6,954	6,954	6,954	6,499	6,499
Totals	**9,090**	**8,328**	**8,328**	**8,328**	**7,874**	**7,874**
Reduction from Baseline Year (2018)	0.19%	8.55%	8.55%	8.55%	13.54%	13.54%

Table 9. Forecast of Annual Greenhouse Gas Emissions for the Credit Valley Hospital

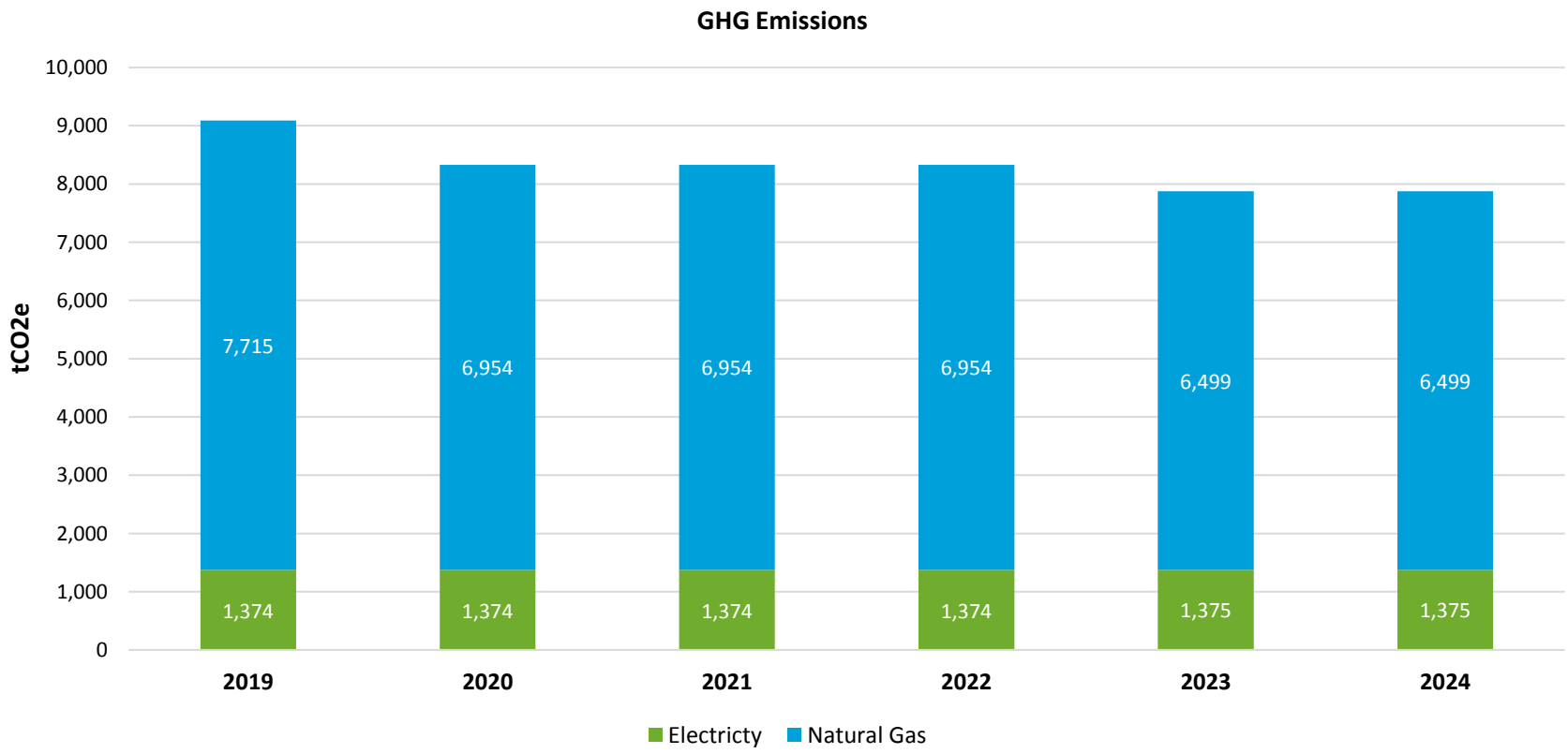


Figure 8. Forecast of Annual Greenhouse Gas Emissions for the Credit Valley

4.2. Mississauga Hospital

Picture 3. Mississauga Hospital

The 24-hour Emergency Centre at Mississauga Hospital is the largest in Canada, one of the busiest in the country, and frequently the front door to many of our regional programs including Stroke, Neurosurgery, Cardiac and Sexual Assault & Domestic Violence Services. Our Mississauga location also houses the largest concentration of critical care services in Canada in its modern facility, offering bright and roomy Intensive Care, Cardiac Surgery Intensive Care and Coronary Care patient rooms.

Facility Information	
Facility Name	**Mississauga Hospital**
Address	100 Queensway W., Mississauga, ON
Gross Area (Sq. Ft)	872,604
Facility Use	Healthcare Services
Average Operational Hours Per Week	168
Number of Beds	636
Number of Floors	7

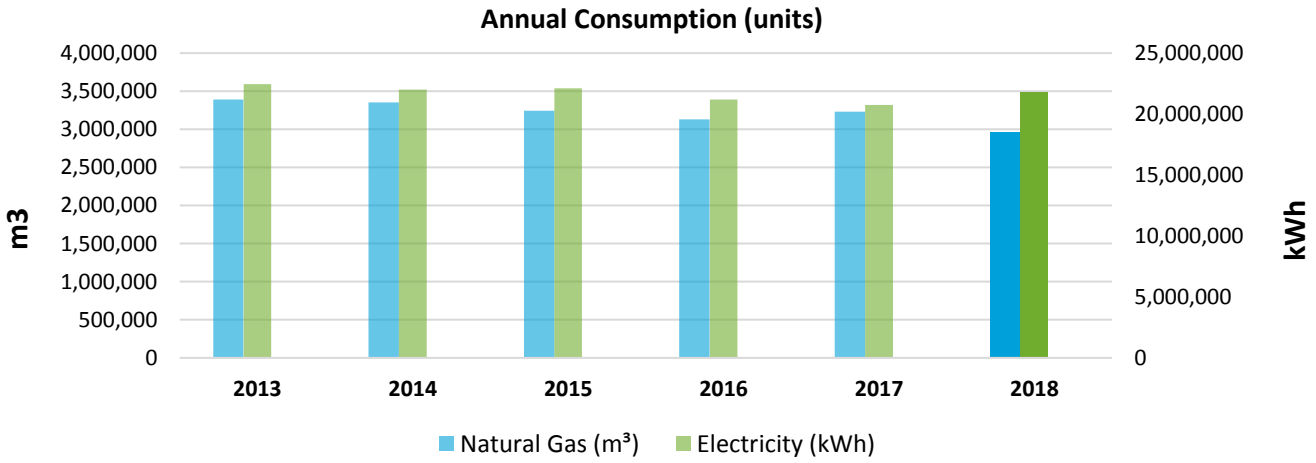
Table 10. Mississauga Hospital Facility Information

4.2.1. Utility Consumption Analysis

Site utilities include electricity and natural gas. The following table summarizes the accounts for each utility. Consumption for each respective utility has been adjusted to fit a regular calendar year (365 days).

Annual Consumption (units)						
Utility	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (kWh)	22,450,141	22,020,064	22,126,215	21,187,773	20,746,151	21,794,789
Natural Gas (m³)	3,389,490	3,351,613	3,242,826	3,130,043	3,233,622	2,961,144

Table 11. Historic Annual Utility Consumption for the Mississauga Hospital



4.2.2. GHG Emissions Analysis

Greenhouse gas emissions are calculated based on the energy consumption data analyzed in the following table:

GHG Emissions (tCO2e)						
Utility Source	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (scope 2)	920	903	907	869	851	894
Natural Gas (scope 1)	6,406	6,335	6,129	5,916	6,112	5,597
Totals	**7,327**	**7,237**	**7,036**	**6,784**	**6,962**	**6,490**

Table 12. Historic Annual Greenhouse Gas Emissions for the Mississauga Hospital

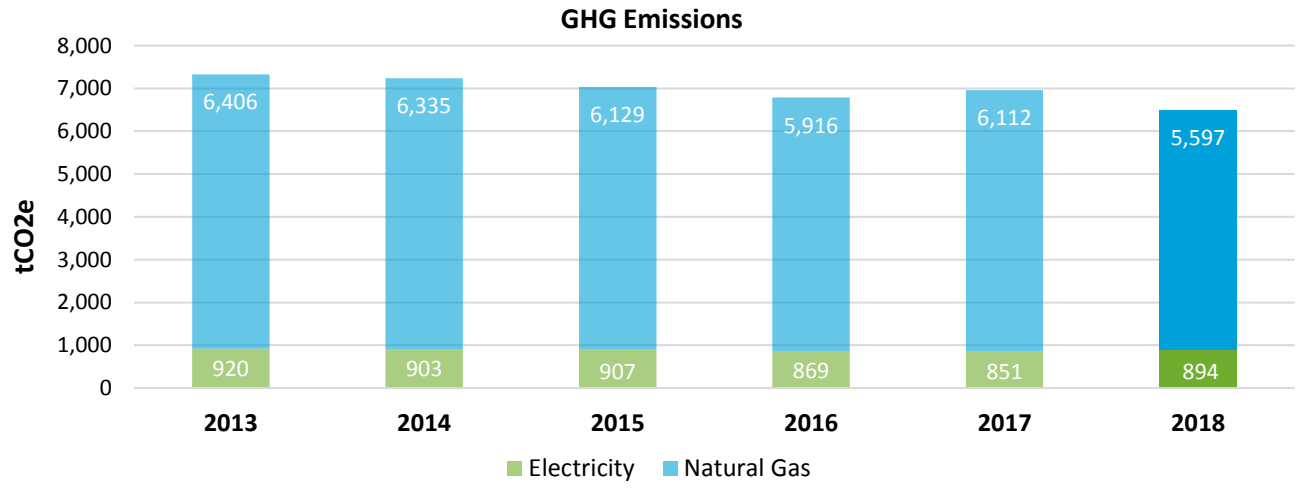


Figure 10. Historic Annual Greenhouse Gas Emissions for the Mississauga Hospital

4.2.3. Proposed Conservation Measures

Our energy analysis has revealed several conservation strategies for the facility. Mississauga Hospital's proposed energy saving initiatives are summarized in the table below outlining the targeted utilities. These measures will remain in place until a more efficient and cost-effective technology is found.

Measure	Impacted Utility	Estimated Annual Savings		Simple Payback (years)	Expected Year of Implementation
		kWh	m3		
Continuous Commissioning HVAC equipment	Electricity & Natural Gas	56,358	4,977	6.69	2020
Match Ventilation Units w/ Occupancy	Electricity & Natural Gas	322,153	57,914	4.39	2021
Total		**378,511**	**62,891**		

Table 13. *Proposed Conservation Measures for the Mississauga Hospital*

4.2.4. Utility Consumption Forecast

By implementing the energy conservation measures stated in the previous section, the forecasted electricity and natural gas use could be forecasted based on the utility savings generated from individual measures. Forecasted utility consumption is tabulated below. The percentage of change is based off the data from the baseline year of 2018.

Annual Consumption												
	2019		2020		2021		2022		2023		2024	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Electricity (kWh)	21,794,789	0%	21,738,431	0.26%	21,416,278	2%	21,416,278	2%	21,416,278	2%	21,416,278	2%
Natural Gas (m^3)	2,961,144	0%	2,956,167	0.17%	2,898,253	2%	2,898,253	2%	2,898,253	2%	2,898,253	2%

Table 14. Forecast of Annual Utility Consumption for the Mississauga Hospital

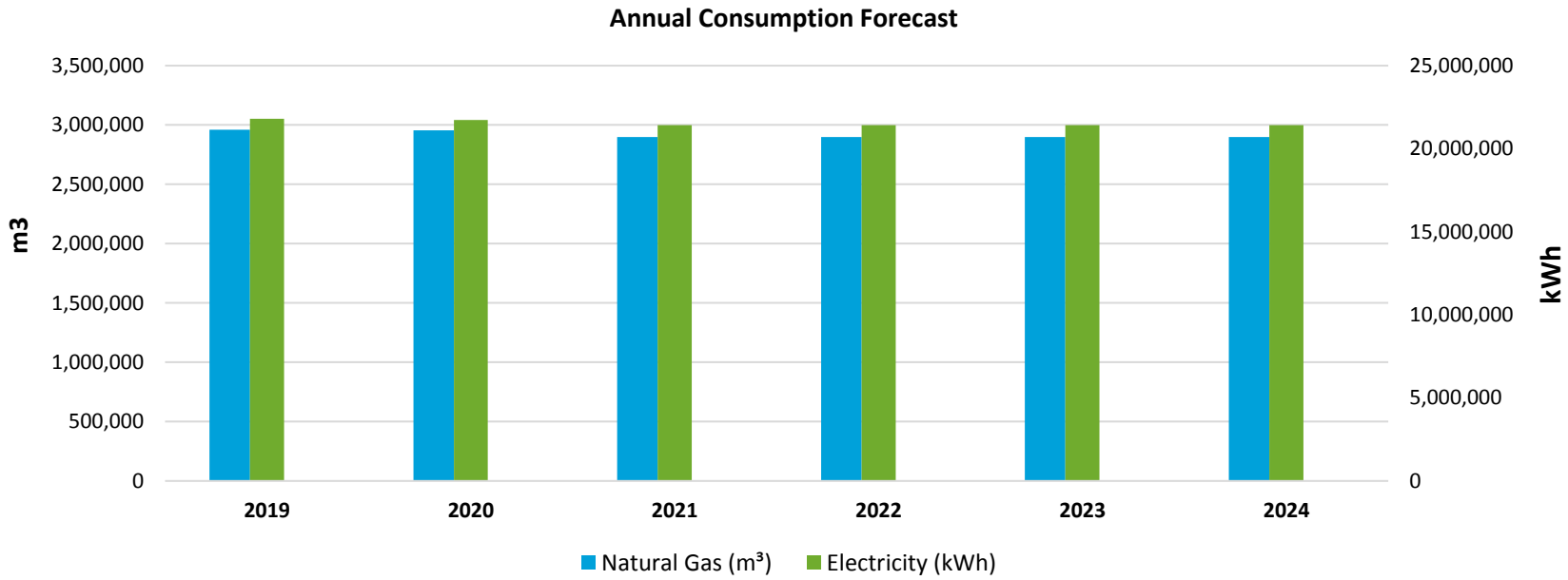


Figure 11. Forecast of Annual Utility Consumption for the Mississauga Hospital

4.2.5. GHG Emissions Forecast

The forecasted greenhouse gas emissions are calculated based on the forecasted energy consumption data analyzed in the previous section and are tabulated in the following table. Reduction percentages are based off the data from the baseline year of 2018.

GHG Emissions (tCO2e)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	894	891	878	878	878	878
Natural Gas (scope 1)	5,597	5,587	5,478	5,478	5,478	5,478
Totals	**6,490**	**6,478**	**6,356**	**6,356**	**6,356**	**6,356**
Reduction from Baseline Year (2018)	0%	0.18%	2%	2%	2%	2%

Table 15. Forecast of Annual Greenhouse Gas Emissions for the Mississauga Hospital

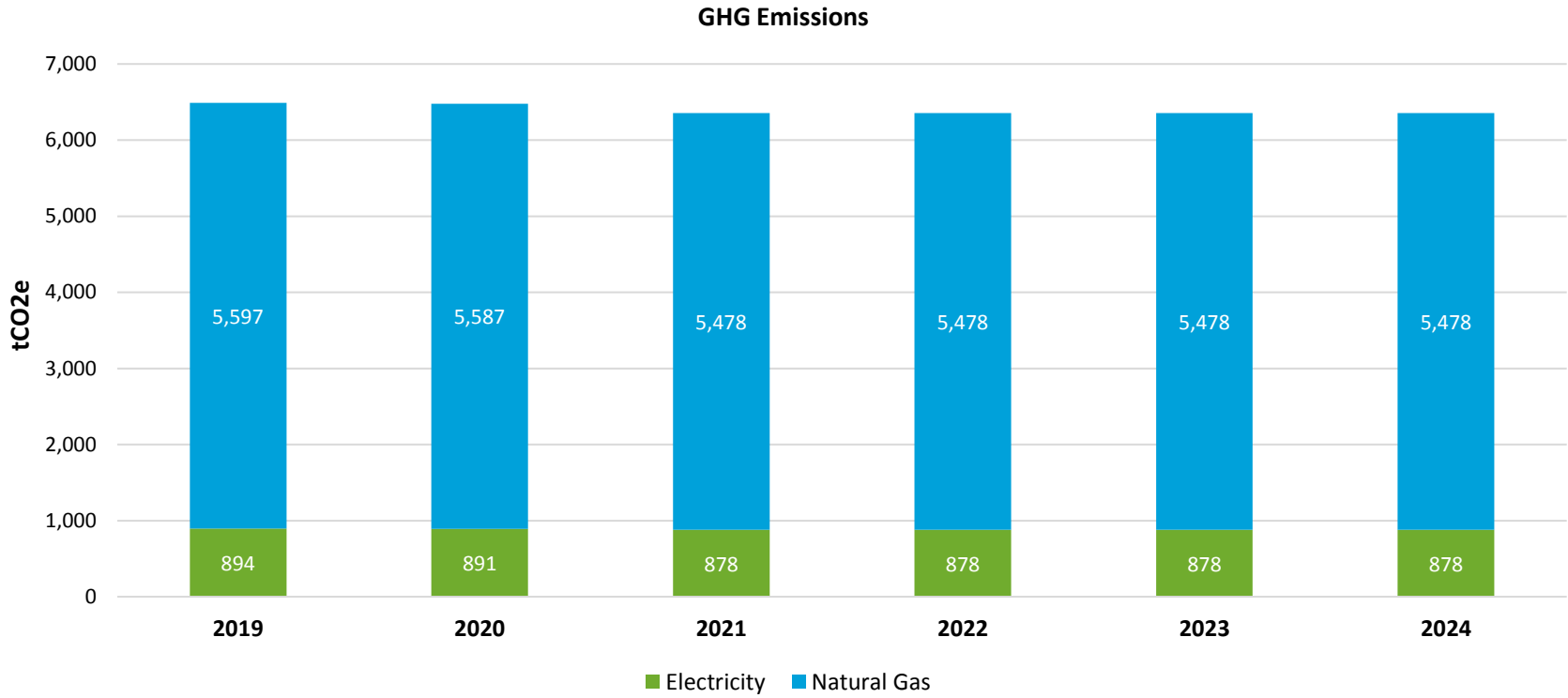


Figure 12. Forecast of Annual Greenhouse Gas Emissions for the Mississauga Hospital

4.3. Queensway Health Centre

Picture 4. Queensway Health Centre

Located on 24 acres of treed land in Toronto, Queensway Health Centre features a 14-Hour Urgent Care Centre, the largest day surgery centre in North America (Surgicentre), a widely recognized Cardiac Wellness & Rehabilitation Centre, and The Betty Wallace Women's Health Centre.

Facility Information	
Facility Name	**Queensway Health Centre**
Address	150 Sherway Drive, Etobicoke, ON
Gross Area (Sq. Ft)	434,539
Facility Use	Healthcare Services
Average Operational Hours Per Week	98
Number of Beds	159
Number of Floors	5

Table 16. Queensway Health Centre Facility Information

4.3.1. Utility Consumption Analysis

Site utilities include electricity and natural gas. The following table summarizes the accounts for each utility. Consumption for each respective utility has been adjusted for a full calendar year (365 days).

Annual Consumption (units)						
Utility	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (kWh)	8,342,304	8,384,711	8,150,536	7,947,575	8,196,946	8,745,976
Natural Gas (m^3)	1,472,156	1,542,679	1,503,468	1,428,562	1,571,128	1,444,418

Table 17. Historic Annual Utility Consumption for the Queensway Health Centre

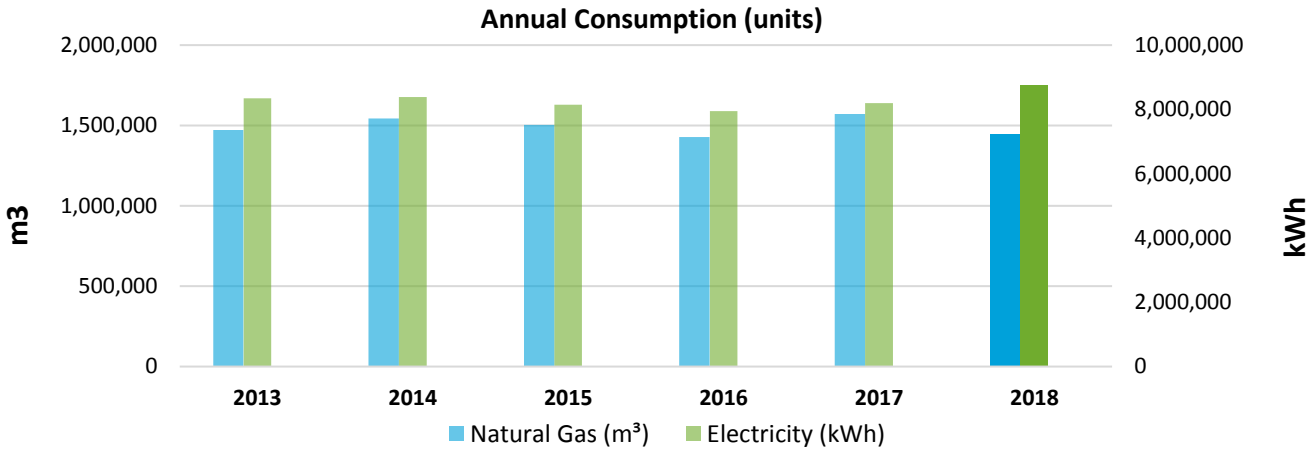


Figure 13. Historic Annual Utility Consumption for the Queensway Health Centre

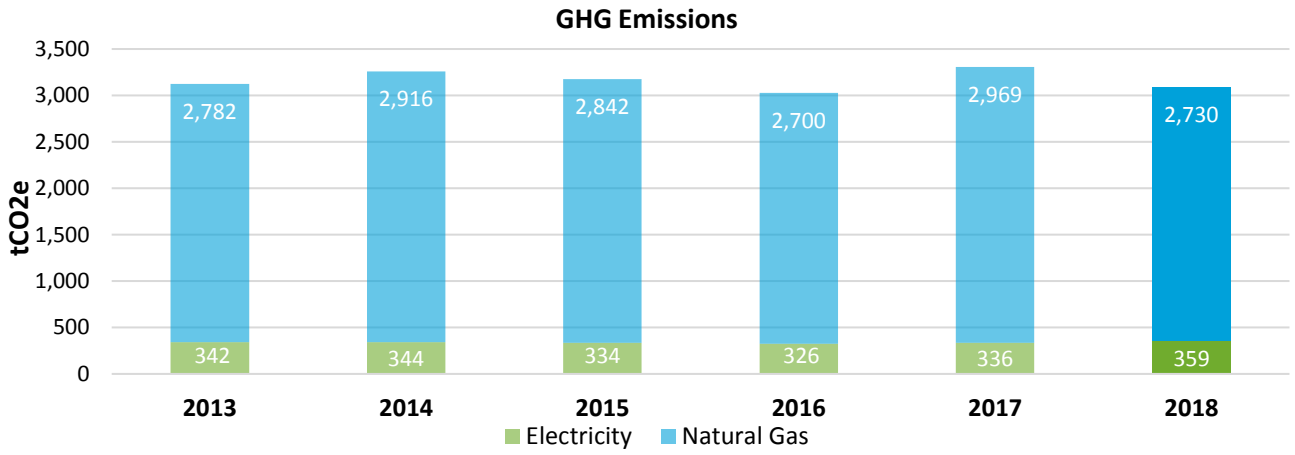
4.3.2. GHG Emissions Analysis

Greenhouse gas emissions are calculated based on the energy consumption data analyzed in the following table:

GHG Emissions (tCO2e)						
Utility Source	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (scope 2)	342	344	334	326	336	359
Natural Gas (scope 1)	2,782	2,916	2,842	2,700	2,969	2,730
Totals	**3,124**	**3,259**	**3,176**	**3,026**	**3,306**	**3,089**

Table 18. Historic Annual Greenhouse Gas Emissions for the Queensway Health Centre

Figure 14. Historic Annual Greenhouse Gas Emissions for the Queensway Health Centre


GHG Emissions
3,500
3,000
2,500
2,000
1,500
1,000
500
0
tCO2e
2,782
2,916
2,842
2,700
2,969
2,730
342
344
334
326
336
359
2013
2014
2015
2016
2017
2018
Electricity
Natural Gas

4.3.3. Proposed Conservation Measures

Our energy analysis has revealed several conservation strategies for the facility. Queensway Health Centre's proposed energy saving initiatives are summarized in the table below outlining targeted utilities. These measures will remain in place until a more efficient and cost-effective technology is found.

Measure	Impacted Utility	Estimated Annual Savings		Simple Payback (years)	Expected Year of Implementation
		kWh	m3		
Match Ventilation Units w/ Occupancy	Electricity & Natural Gas	435,510	94,276	2.55	2022
Continuous Commissioning HVAC equipment	Electricity & Natural Gas	21,481	4,729	8.64	2021
Total		**456,991**	**99,005**		

Table 19. Proposed Conservation Measures for the Queensway Health Centre

4.3.4. Utility Consumption Forecast

By implementing the energy conservation measures stated in the previous section, the forecasted electricity and natural gas use could be forecasted based on the utility savings generated from individual measures. The forecasted utility consumption is tabulated below. The percentage of change is based off the data from the baseline year of 2018.

Annual Consumption												
	2019		2020		2021		2022		2023		2024	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Electricity (kWh)	8,745,976	0%	8,745,976	0%	8,724,495	0.25%	8,288,985	5%	8,288,985	5%	8,288,985	5%
Natural Gas (m^3)	1,444,418	0%	1,444,418	0%	1,439,689	0.33%	1,345,413	7%	1,345,413	7%	1,345,413	7%

Table 20. Forecast of Annual Utility Consumption for the Queensway Health Centre

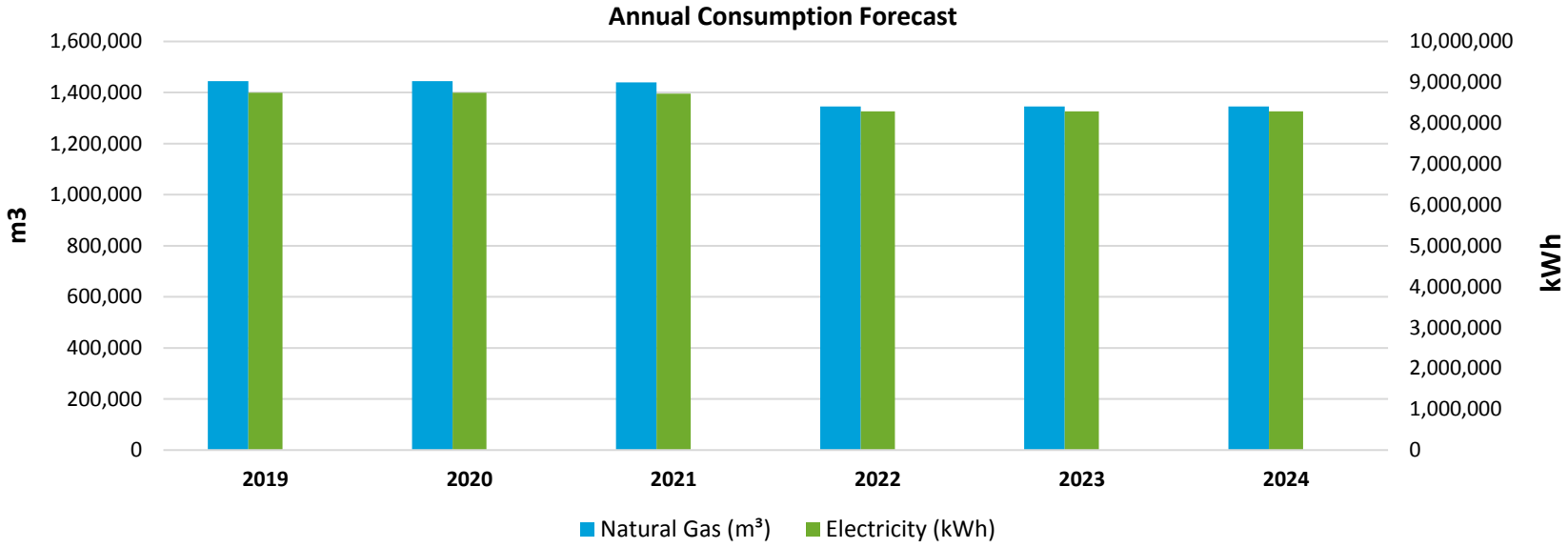


Figure 15. Forecast of Annual Utility Consumption for the Queensway Health Centre

4.3.5. GHG Emissions Forecast

Forecasted greenhouse gas emissions are calculated based on the forecasted energy consumption data analyzed in the previous section and are tabulated in the following table. Reduction percentages are based off the data from the baseline year of 2018.

GHG Emissions (tCO2e)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	359	359	358	340	340	340
Natural Gas (scope 1)	2,730	2,730	2,721	2,543	2,543	2,543
Totals	**3,089**	**3,089**	**3,079**	**2,883**	**2,883**	**2,883**
Reduction from Baseline Year (2018)	0%	0%	0.32%	7%	7%	7%

Table 21. Forecast of Annual Greenhouse Gas Emissions for the Queensway Health Centre

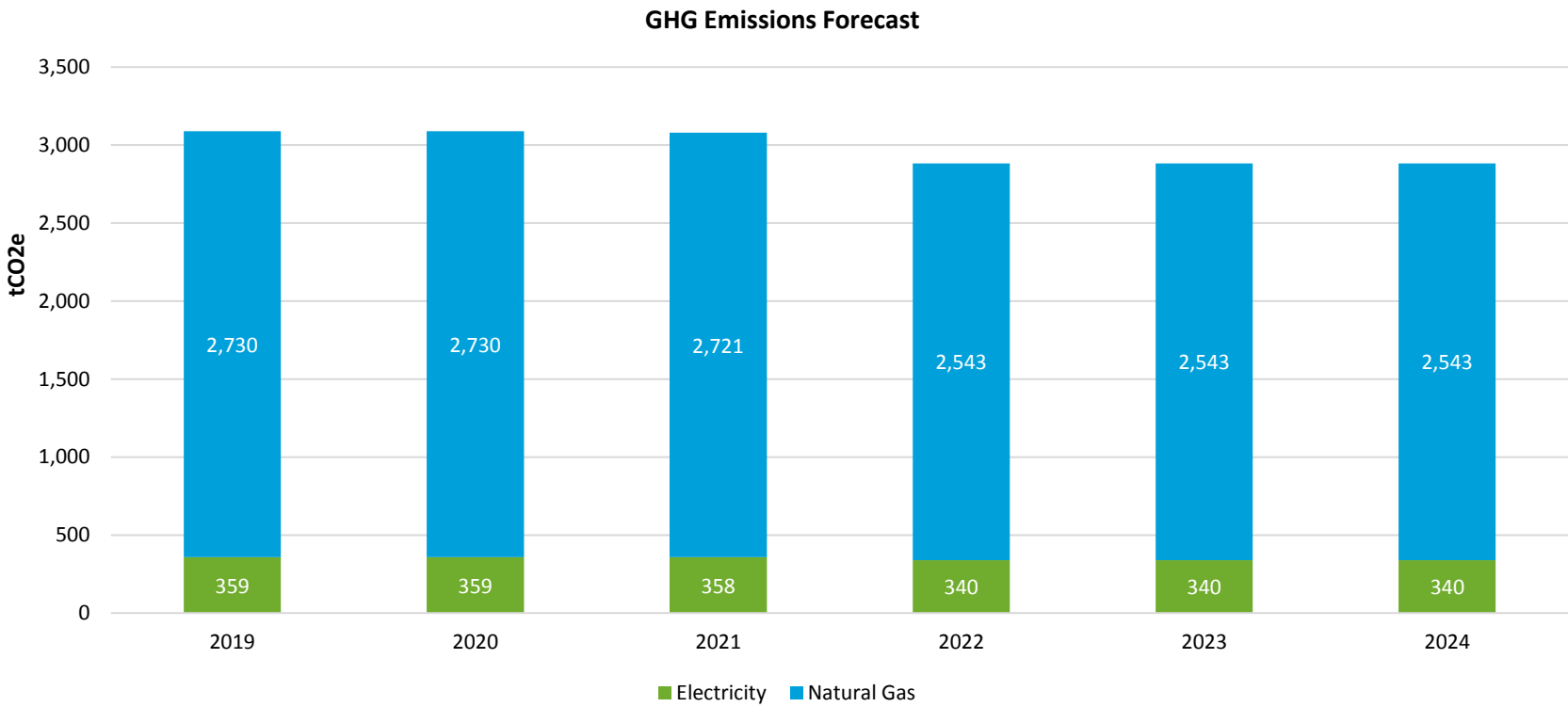


Figure 16. Forecast of Annual Greenhouse Gas Emissions for the Queensway Health Centre

4.4. Clinical Administrations Building

Picture 5. Clinical Administrations Building

The Clinical Administrations Building is located near Mississauga Hospital, which is Trillium Health Partners main facility.

Facility Information	
Facility Name	**Clinical Administrations Building**
Address	15 Bronte College Court, Mississauga, ON
Gross Area (Sq. Ft)	124,654
Facility Use	Administrative and Healthcare Services
Average Operational Hours Per Week	40
Number of Floors	7

Table 22. Clinical Administrations Building Facility Information

4.4.1. Utility Consumption Analysis

Site utilities include electricity and natural gas. The following table summarizes the accounts for each utility. Consumption for each respective utility has been adjusted to fit a full calendar year (365 days).

Annual Consumption (units)						
Utility	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (kWh)	1,494,000	1,688,400	1,615,500	1,659,600	1,743,336	1,976,894
Natural Gas (m^3)	102,874	117,255	106,991	89,580	119,103	158,618

Table 23. Historic Annual Utility Consumption for the Clinical Administrations Building

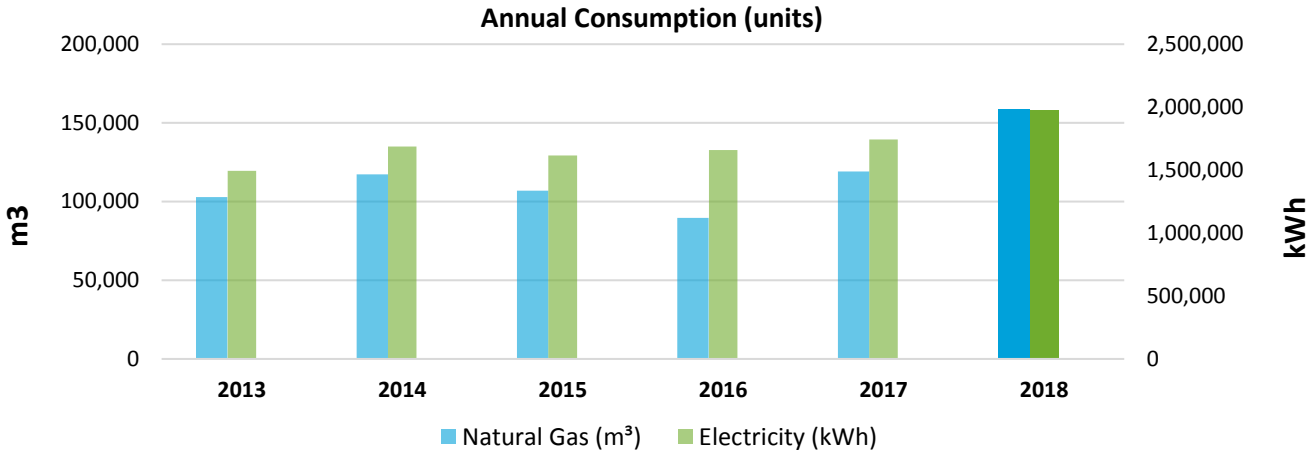


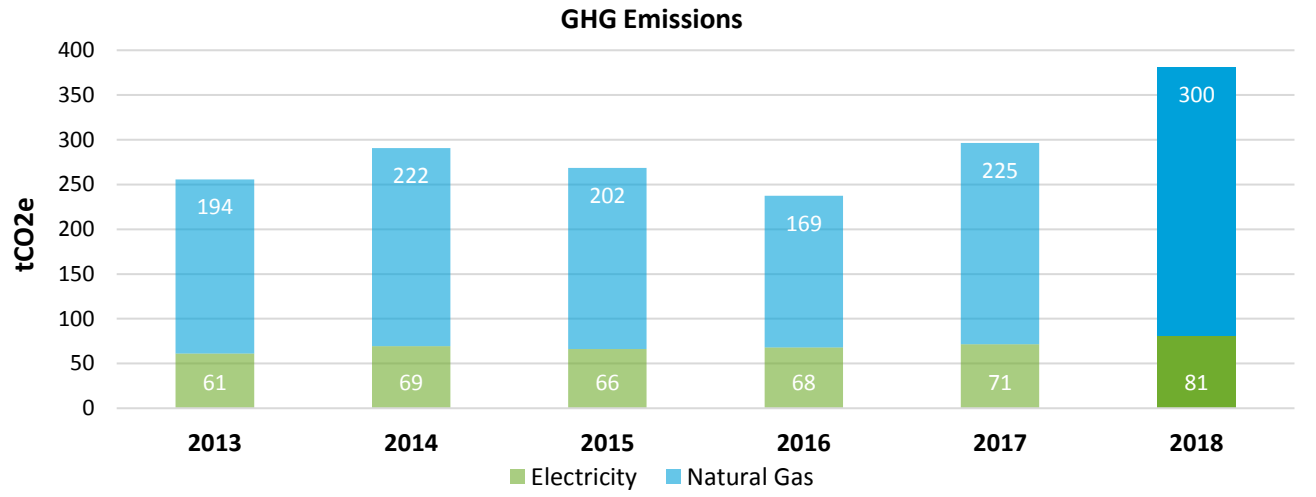
Figure 17. Historic Annual Utility Consumption for the Clinical Administrations Building

4.4.2. GHG Emissions Analysis

Greenhouse gas emissions are calculated based on the energy consumption data analyzed in the following table:

GHG Emissions (tCO2e)						
Utility Source	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (scope 2)	61	69	66	68	71	81
Natural Gas (scope 1)	194	222	202	169	225	300
Totals	**256**	**291**	**268**	**237**	**297**	**381**

Table 24. Historic Annual Greenhouse Gas Emissions for the Clinical Administrations Building



4.4.3. Proposed Conservation Measures

Our energy analysis has revealed an opportunity to apply for LEED Operation & Maintenance Certification for this facility. The Trillium Team will aim to apply for certification in the year 2020.

Measure	Impacted Utility	Estimated Annual Savings		Simple Payback (years)	Expected Year of Implementation
		kWh	m3		
LEED Operations & Maintenance Certification	Electricity, Natural Gas & Water	N/A	N/A	N/A	2020
Total					

Table 25. Proposed Conservation Measures for the Clinical Administrations Building

4.4.4. Utility Consumption Forecast

By implementing the energy conservation measures stated in the previous section, the forecasted electricity and natural gas use could be forecasted based on the utility savings generated from individual measures. The forecasted utility consumption is tabulated below. The percentage of change is based off the data from the baseline year of 2018.

Annual Consumption												
	2019		2020		2021		2022		2023		2024	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Electricity (kWh)	1,976,894	0%	1,976,894	0%	1,976,894	0%	1,976,894	0%	1,976,894	0%	1,976,894	0%
Natural Gas (m^3)	158,618	0%	158,618	0%	158,618	0%	158,618	0%	158,618	0%	158,618	0%

Table 26. Forecast of Annual Utility Consumption for the Clinical Administrations Building

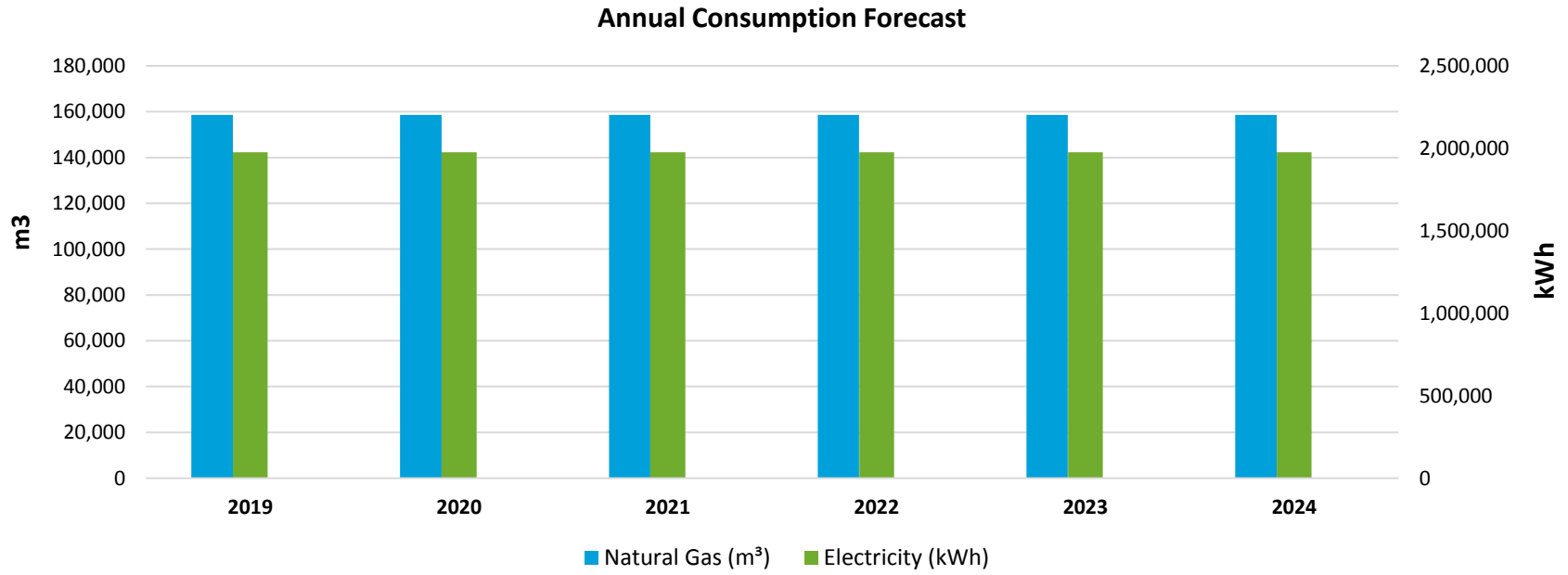


Figure 19. Forecast of Annual Utility Consumption for the Clinical Administrations Building

4.4.5. GHG Emissions Forecast

Forecasted greenhouse gas emissions are calculated based on the forecasted energy consumption data analyzed in the previous section and are tabulated in the following table. Reduction percentages are based off the data from the baseline year of 2018.

GHG Emissions (tCO2e)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	81	81	81	81	81	81
Natural Gas (scope 1)	300	300	300	300	300	300
Totals	**381**	**381**	**381**	**381**	**381**	**381**
Reduction from Baseline Year (2018)	0%	0%	0%	0%	0%	0%

Table 27. Forecast of Annual Greenhouse Gas Emissions for the Clinical Administrations Building

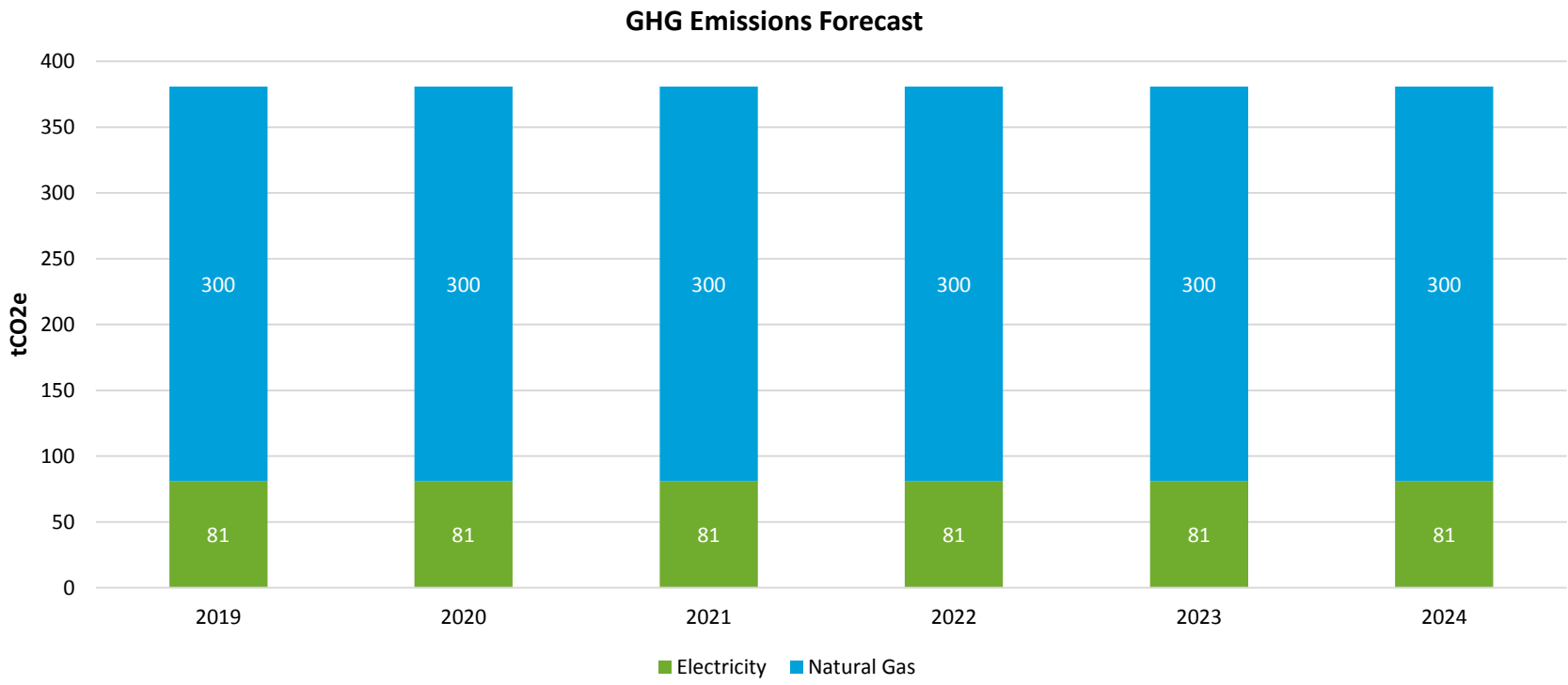


Figure 20. Forecast of Annual Greenhouse Gas Emissions for the Clinical Administrations Building

5. Site Outlook

5.1. Site-Wide Utility Consumption

By implementing the energy conservation measures stated in the previous sections, in each respective site, Trillium Health Partners' site-wide projected electricity and natural gas use could be forecasted based on the utility savings generated from individual measures. The site-wide forecasted utility consumption is tabulated below. The percentage of change is based on the data from the baseline year of 2018.

Annual Consumption												
	2019		2020		2021		2022		2023		2024	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Electricity (kWh)	66,040,663	0.08%	65,981,022	0.17%	65,637,388	1%	65,201,878	1%	65,228,832	1%	65,228,832	1%
Natural Gas (m^3)	8,646,293	0.09%	8,238,462	5%	8,175,819	6%	8,081,543	7%	7,840,804	9%	7,840,804	9%

Table 28. Forecast of Annual Utility Consumption for all Sites

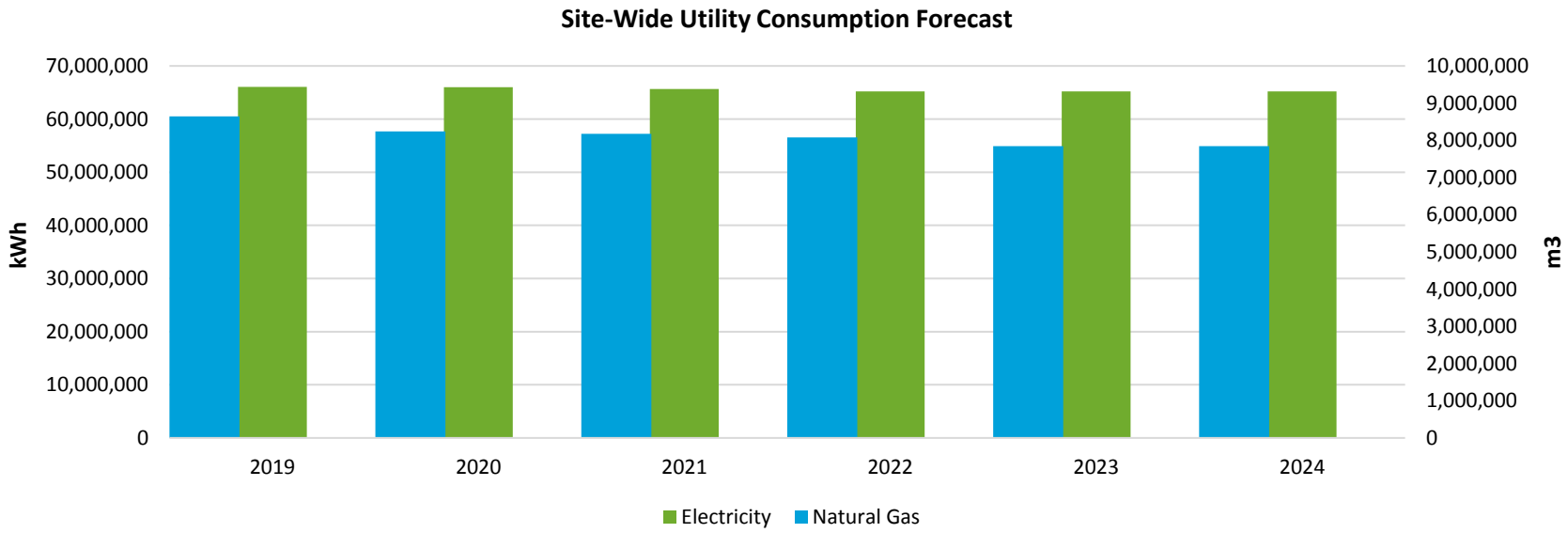


Figure 21. Forecast of Annual Utility Consumption for all Sites

5.2. Site-Wide GHG Emissions

Organizational greenhouse gas emissions are calculated based on the forecasted site-wide energy consumption data analyzed in the previous section and are tabulated in the following table. Reduction percentages are based on the data from the baseline year of 2018.

GHG Emissions (tCO2e)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	2,708	2,705	2,691	2,673	2,674	2,674
Natural Gas (scope 1)	16,341	15,571	15,452	15,274	14,819	14,819
Totals	**19,049**	**18,276**	**18,143**	**17,947**	**17,494**	**17,494**
Reduction from Baseline Year (2018)	0.09%	4%	5%	6%	8%	8%

Table 29. Forecast of Annual Greenhouse Gas Emissions for all Sites

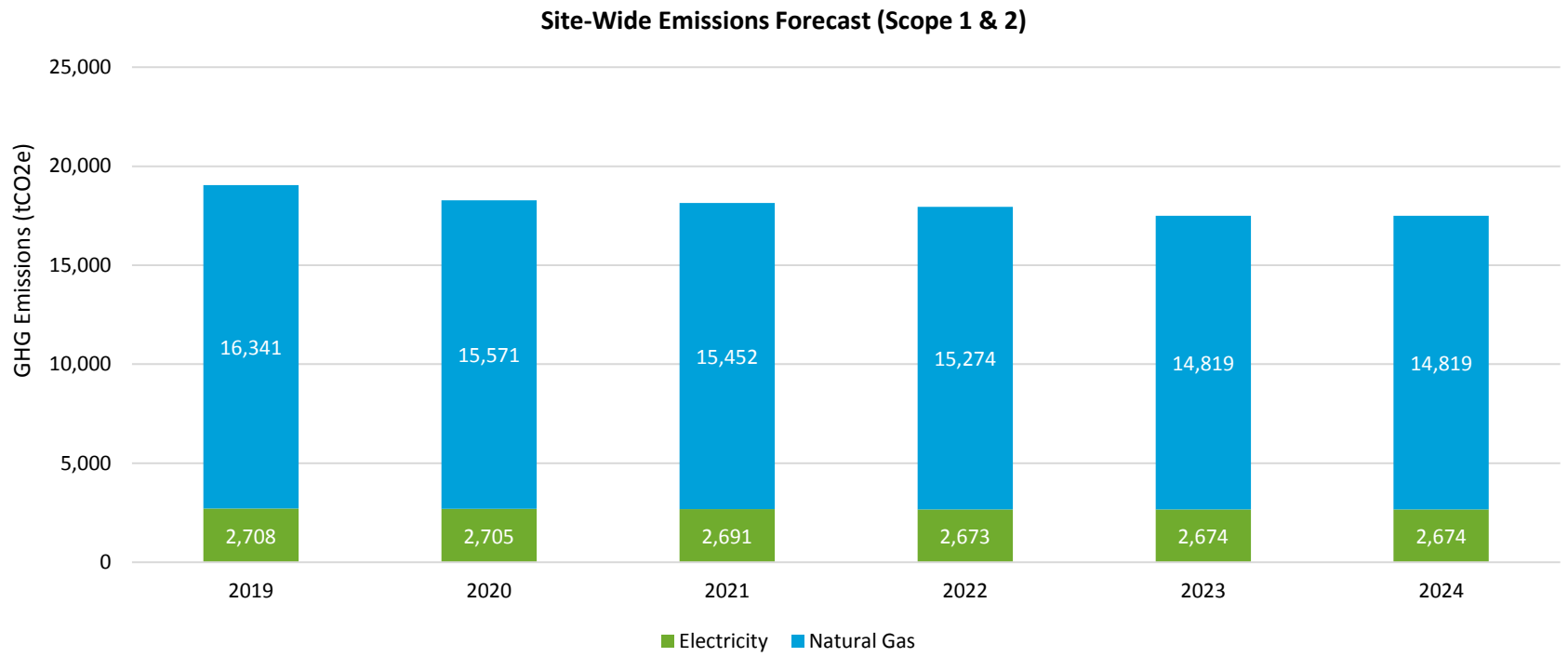


Figure 22. Forecast of Annual Greenhouse Gas Emissions for all Sites

6. Closing Comments

Thank you to all who contributed to Trillium Health Partner's Energy Conservation & Demand Management Plan. This plan is for today and tomorrow, and sets a course for Trillium Health Partners for the next 5 years. We consider our facility a primary source of care, and an integral part of the local community. The key to this relationship is being able to use our facilities efficiently and effectively to maximize our ability to provide the highest quality of healthcare services while integrating environmental stewardship into all aspects of facility operations.

On behalf of the senior management team here at Trillium Health Partners, we approve this Energy Conservation & Demand Management Plan.

Approved By: **Paul Soares**
Director, Facilities, Parking & Security
June 24, 2019

This ECDM plan was created through a collaborative effort between

Trillium Health Partners and Blackstone Energy Services.

7. Appendix

7.1. Glossary of terms

Word	Abbreviation	Meaning
Baseline Year		A baseline is a benchmark that is used as a foundation for measuring or comparing current and past values.
Building Automation System	BAS	Building automation is the automatic centralized control of a building's heating, ventilation and air conditioning, lighting and other systems through a building management system or building automation system (BAS)
Carbon Dioxide	CO2	Carbon dioxide is a commonly referred to greenhouse gas that results, in part, from the combustion of fossil fuels.
Energy Usage Intensity	EUI	Energy usage intensity means the amount of energy relative to relative to a buildings physical size typically measured in square feet.
Equivalent Carbon Dioxide	CO2e	CO2e provides a common means of measurement when comparing different greenhouse gases.
GHG Protocol		GHG Protocol refers to the recognized international standards used in the measurement and quantification of greenhouse gases.
Greenhouse Gas	GHG	Greenhouse gas means a gas that contributes to the greenhouse effect by absorbing infrared radiation, e.g., carbon dioxide and chlorofluorocarbons.
Metric Tonnes	t	Metric tonnes are a unit of measurement. 1 metric tonne = 1000 kilograms
Net Zero		A net-zero energy building, is a building with zero net energy consumption, meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site,
Variable Frequency Drive	VFD	A variable frequency drive is a device that allows for the modulation of an electrical or mechanical piece of equipment.

7.2. List of Pictures, Tables and Figures

Pictures

Tables

Figures