2019

ENERGY CONSERVATION & DEMAND MANAGEMENT PLAN

DURHAM COLLEGE
SUCCESS MATTERS

Executive Summary

The purpose of this Energy Conservation and Demand Management (ECDM) Plan from Durham College ("DC") is to outline specific actions and measures that will promote good stewardship of our environment and community resources in the years to come.

This ECDM outlines how the college will reduce overall energy consumption, operating costs and greenhouse gas emissions. This ECDM Plan is written in accordance with sections 4, 5, and 6 of the recently amended Electricity Act, 1998, O. Reg. 507/18.

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

- Energy Use Index (EUI) was 47 ekWh/sq.ft
- Energy-related emissions equaled 4,015 tCO_2e

To obtain full value from energy management activities, DC will take a strategic approach to fully integrate 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 this prominent focus on energy management, DC can expect to achieve the following targets by 2024:

- 11 % reduction in electricity consumption
- 28 % reduction in natural gas consumption
- 947 tCO_2e reduction of carbon equivalent emissions

Contents

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 previous ECDM plan, and the projected impact of the new ECDM Plan is presented in the chart & tables below.

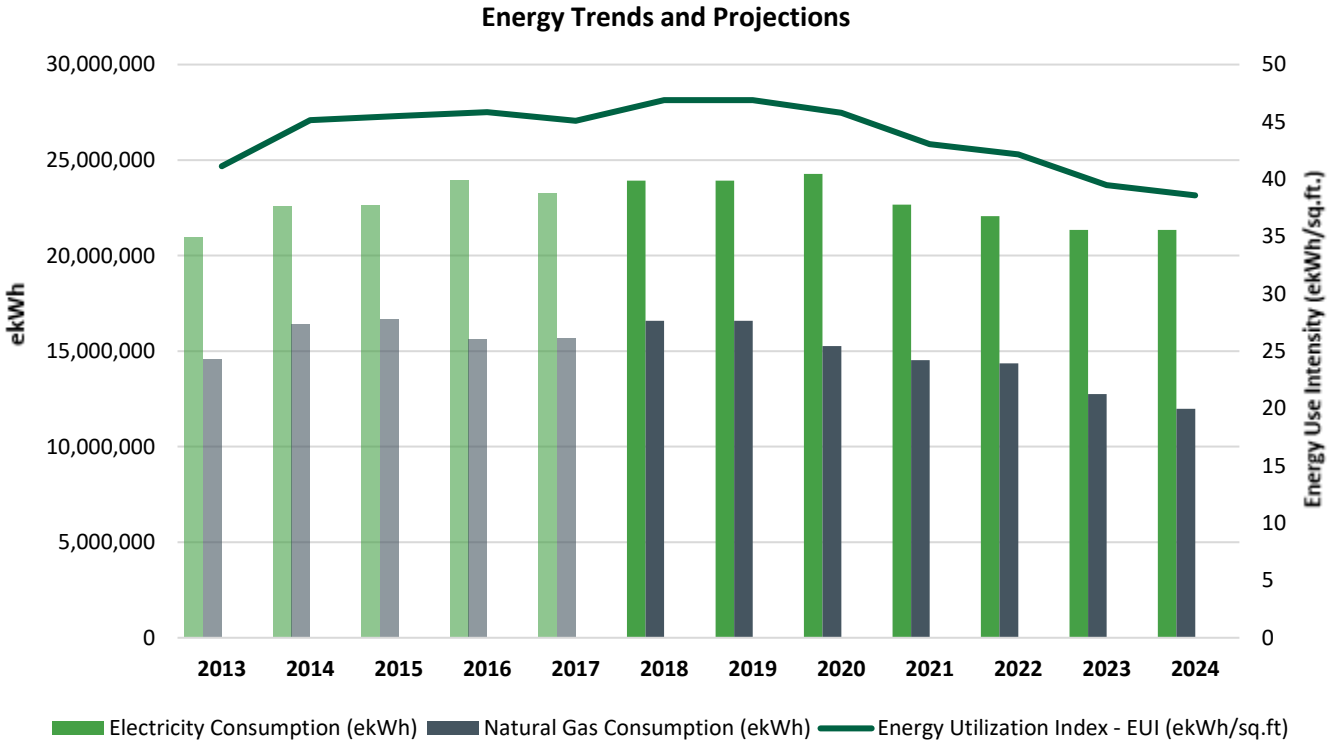

Figure 1. *Campus-Wide Energy Consumption Trends and Projections*

ECDM Program Summary	2013	2014	2015	2016	2017	2018
Electricity Consumption (ekWh)	20,944,918	22,594,581	22,622,725	23,961,007	23,274,924	23,917,449
Natural Gas Consumption (ekWh)	14,582,678	16,390,517	16,676,370	15,630,910	15,681,823	16,585,654
Facility Size (Sq. Ft.)	863,659	863,659	863,659	863,659	863,659	863,659
Energy Utilization Index - EUI (ekWh/Sq. Ft)	41	45	46	46	45	47
ECDM Program Projections	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity Consumption (ekWh)	23,917,449	24,274,403	22,670,320	22,059,539	21,341,452	21,341,452
Natural Gas Consumption (ekWh)	16,585,654	15,269,261	14,524,860	14,363,545	12,748,166	11,984,638
Facility Size (Sq. Ft.)	863,659	863,659	863,659	863,659	863,659	863,659
Energy Utilization Index - EUI (ekWh/Sq. Ft)	47	46	43	42	39	39

Table 1. *Campus-Wide Energy Consumption Trends and Projections*

An unwavering commitment to student success, high-quality programs led by exceptional professors with real-world experience, graduates who've gone on to outstanding career success and a treasured relationship with the community – Durham College (DC) has been guided by these ideals since 1967.

Our Mission

The student experience comes first at Durham College.

Our Vision

Durham College is the premier post-secondary destination for students who succeed in a dynamic and supportive learning environment. Our graduates develop the professional and personal skills required to realize meaningful careers and make a difference in the world.

Our Values

Our values drive our organizational culture and behaviour in delivering our vision and mission. We value:

- **Integrity and transparency** – We behave and communicate sincerely and honestly.
- **Respect** – We treat everyone with dignity deliver superior service and offer a safe environment.
- **Equal access and diversity** – We embrace diversity, ensure accessibility and champion all learners.
- **Personal and team accountability** – We do what we say we will do and are creative and innovative in how we conduct our business
- **Collaboration** – We create opportunities to work together to foster learning and achieve success

Our Goals

- **Our students** – To provide students with the best possible learning experience.
- **Our people** – To optimize the experience and expertise of our people and help them make the best possible contribution toward the student experience.
- **Our business** – To manage resources responsibly and ensure that we are financially and environmentally sustainable, demonstrate good governance, and are leaders in the support of outstanding teaching and learning.
- **Our community** – To contribute and respond to the economy, social and environmental well-being of our community.

2. Regulatory Update

O. Reg. 397/11: Conservation and Demand Management Plans 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, the 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 Durham College

DC's Oshawa and Whitby campuses are located in safe and secure settings that offer the best of country and city living. DC's nine academic schools offer market-driven programs, led by industry experts, across a wide range of disciplines from Business, IT and Management to Media, Art and Design. Thanks to our expert faculty with extensive industry experience and leading educational resources, our alumni go on to successful careers in their chosen field.

3.1. Campus-Wide Historical Energy Intensity

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 industry average for Ontario Colleges (derived from Natural Resources Canada's Commercial and Institutional Consumption of Energy Survey), which was found to be **27.63/sq. ft.**

Annual Consumption (EUI)						
Campus	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Oshawa Campus	45	49	47	52	51	51
Whitby Campus	31	37	42	32	31	36

Table 2. *Historic Energy Utilization Indices for All DC Sites*

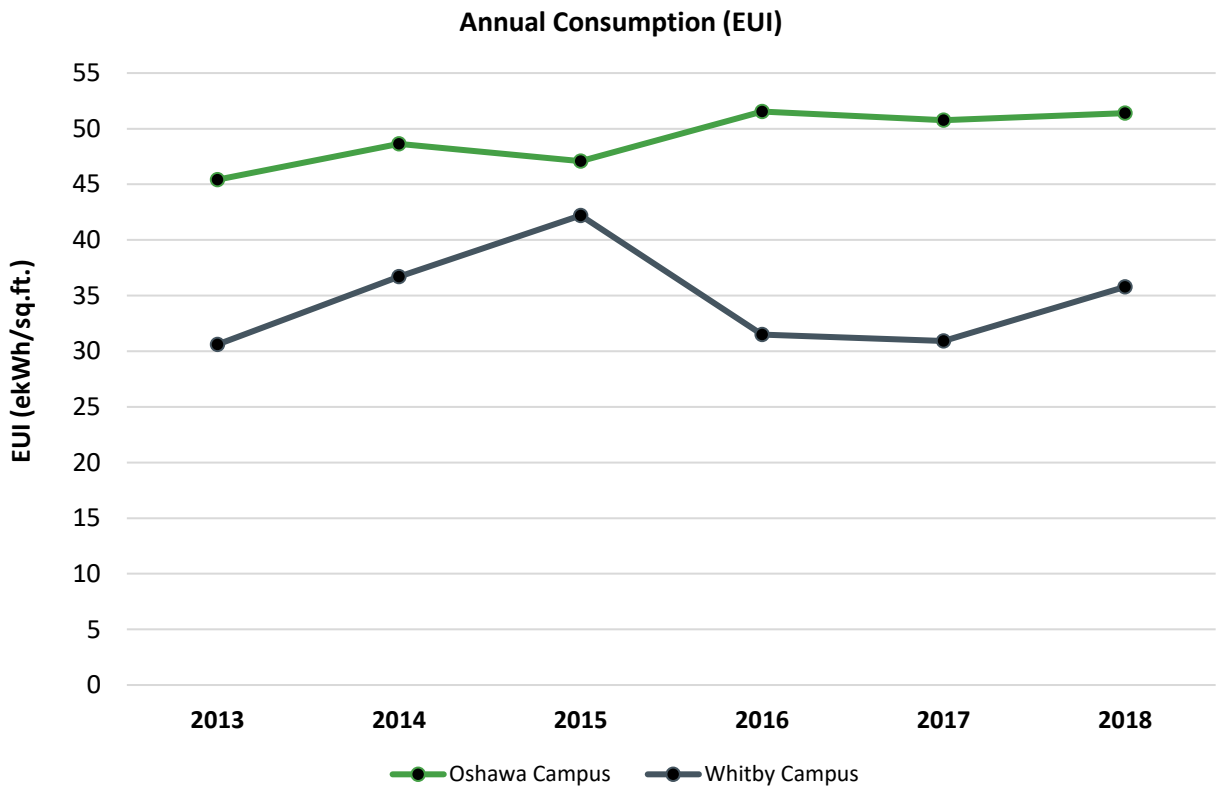

Figure 2*. Historic Annual Energy Intensity for All DC Sites*

3.2. Campus-Wide Historical GHG Emissions

Greenhouse gas (GHG) emissions are expressed in terms of equivalent tonnes of Carbon Dioxide (tCO_2e). 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.

Electricity from the grid in Ontario is relatively "clean", as the majority is derived from low-GHG hydroelectricity, and coal-fired plants have been phased out. Scope 1 (natural gas) and Scope 2 (electricity) consumptions have been converted to their equivalent tonnes of greenhouse gas emissions in the table below. Scope 1 represents the direct emissions from sources owned or controlled by the institution, and Scope 2 consists of indirect emissions from the consumption of purchased energy generated upstream from the institution.

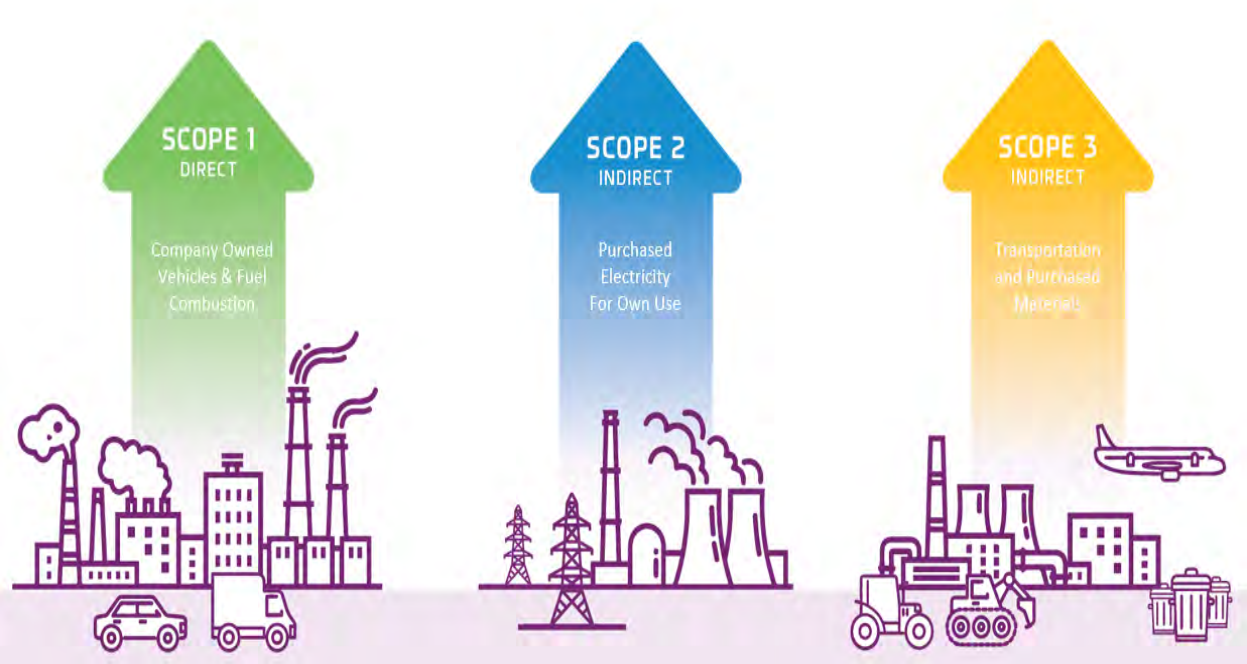

Figure 3. *Examples of Scope 1 and 2*

The site-wide greenhouse gas emissions for DC have been tabulated and are reflected in the table and graph below. The GHG emissions are expressed in terms of equivalent tonnes of Carbon Dioxide (tCO_2e).

GHG Emissions (tCO_2e)	2013	2014	2015	2016	2017	2018
Electricity (scope 2)	859	926	928	982	954	981
Natural Gas (scope 1)	2,668	2,999	3,051	2,860	2,869	3,035
Total	**3,527**	**3,925**	**3,979**	**3,842**	**3,823**	**4,015**

Table 3. *Historic Greenhouse Gas Emissions for All DC Sites*

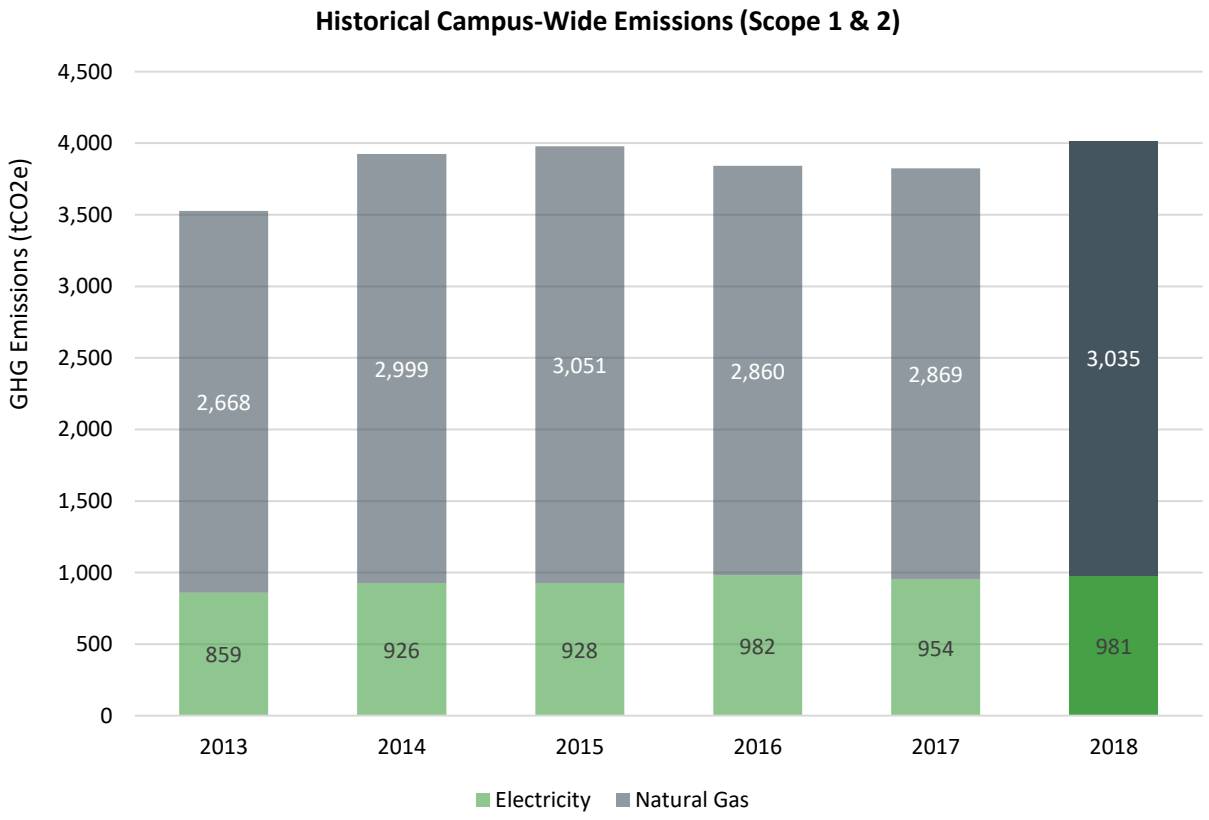

Figure 4. *Historic Greenhouse Gas Emissions for All DC SItes*

3.3. Sustainability at Durham College

At DC, sustainability guides our decisions and practices in fostering the continued success and well-being of our students, people and planet. Aligned with the United Nations Sustainable Development Goals (SDGs), our Living Green initiative serves to inspire and equip the campus with appropriate resources to identify and implement new programs and activities designed to reduce campus energy, water, and paper consumption, maximize waste diversion, reduce greenhouse gas emissions and inspire a sustainable mindset.

DC has chosen to focus on several key SDGs to guide our sustainability programs over the next few years:

- Quality Education
- Clean Water and Sanitation
- Affordable and Clean Energy
- Decent Work and Economic Growth
- Sustainable Cities and Communities
- Responsible Consumption and Production
- Climate Action

Action on these SDGs is supported by DC programs such as Green Office Certification, Solid Waste Management policy including waste reduction and responsible diversion, energy efficiency and renewable energy, Green Restaurant Certification, green events, and mobilization of action on campus through the Green Impact Team, to name a few.

Durham College has also partnered with key local environmental organizations such as Smart Commute Durham, General Motors Company of Canada, and the Ontario Sustainable Energy Association. DC employees are also active on various regional committees such as the Durham Environmental Advisory Committee.

As an institution committed to reducing our environmental footprint, we recognize that there is still work to be done, but it is also important to celebrate achievements and use them to fuel further action, such as:

- the W. Galen Weston Centre for Food (CFF) achieved the rating of 3 Star Certified Green Restaurant® from the Green Restaurant Association in 2016;
- in 2017, DC received a Silver rating from STARS (Sustainability Tracking, Assessment & Ratings System) for on-campus sustainability initiatives;
- DC earned a Gold-level Smart Commute Workplace designation in 2018;
- in 2019, DC was named one of Canada's Greenest Employers for the third year in a row.

As we work toward our goals, we will continue to use the 17 SDGs to guide us in planning and implementing future sustainability initiatives.

4. Site Analysis

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

4.1. Oshawa Campus

Picture 1. *Oshawa Campus*

Facility Information	
Facility Name	**Durham College Oshawa Campus**
Type of Facility	Post-Secondary Education Institution
Address	2000 Simcoe Street N., Oshawa, ON
Gross Area (Sq. Ft)	623,040
Average Operational Hours Per Week	168

Table 4*. Oshawa Campus Facility Information*

4.1.1. Utility Consumption Analysis

Utilities to the site are 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)	17,167,308	17,545,054	17,451,357	19,036,678	18,561,677	18,866,919
Natural Gas (m^3)	1,077,606	1,234,329	1,150,364	1,265,790	1,264,231	1,273,999

Table 5. *Historic Annual Utility Consumption for the Oshawa Campus*

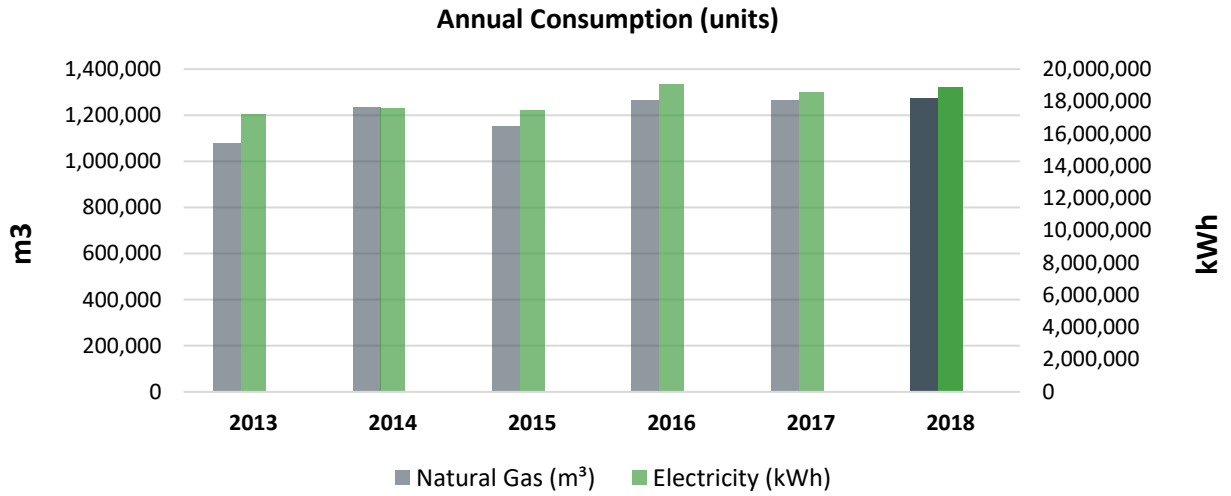

Figure 5. *Historic Annual Utility Consumption for the Oshawa Campus*

4.1.2. GHG Emissions Analysis

The greenhouse gas emissions are calculated based on the energy consumption data analyzed in the following table.

GHG Emissions (tCO_2e)						
Utility Source	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (scope 2)	704	719	716	781	761	774
Natural Gas (scope 1)	2,037	2,333	2,174	2,392	2,389	2,408
Totals	**2,741**	**3,052**	**2,890**	**3,173**	**3,150**	**3,181**

Table 6. *Historic Annual Greenhouse Gas Emissions for the Oshawa Campus*

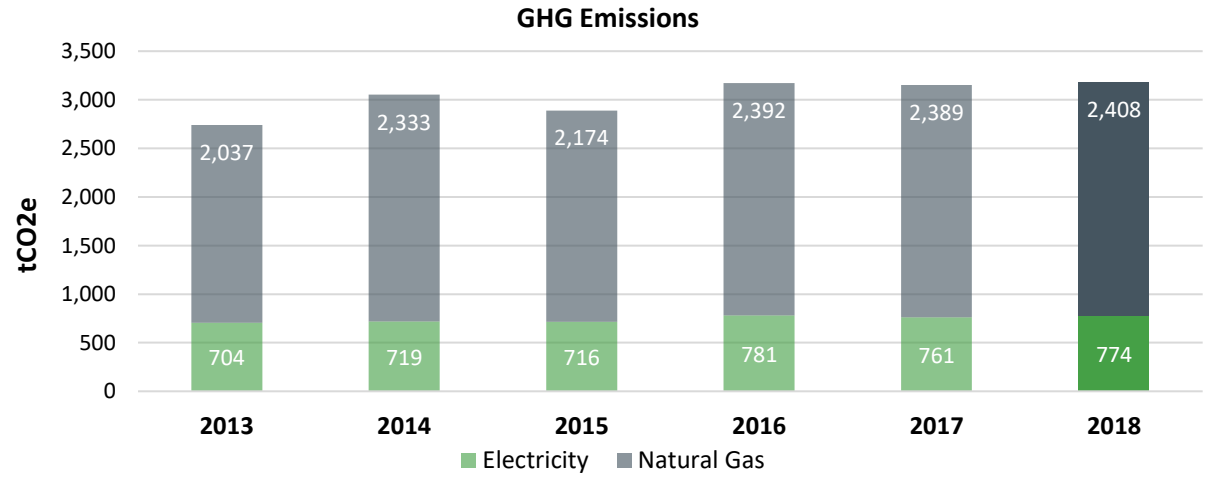

Figure 6. *Historic Annual Greenhouse Gas Emissions for the Oshawa Campus*

4.1.3. Proposed Conservation Measures

Our energy analysis has revealed several conservation strategies for the facility. Oshawa Campus' 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
		Electricity (kWh)	$	Natural Gas (m3)	$		
Lighting Upgrade to LED Fixtures	Electricity & Natural Gas	551,949	$76,614	-9,174	-$2,004	6.03	2020
Building Automation Recommissioning/Adjust Schedule	Electricity & Natural Gas	503,879	$69,942	46,471	$10,150	2.81	2020
Upgrade Selected Air Handling Units (AHU) (AHU-A1, AHU-B1, AHU-H1 & AHU-H2)	Electricity & Natural Gas	92,236	$12,982	11,187	$2,458	45.34	2021
Convert Constant Air Volume Air Handling Units to Variable Air Volume	Electricity & Natural Gas	482,503	$68,863	46,136	$10,193	6.01	2022
Lighting Control Based on Classroom Occupancy	Electricity	321,970	$45,317	0	$0	8.28	2021
Weather Stripping and Caulking	Natural Gas	0	$0	57,335	$12,742	7.46	2023
Piping Insulation	Natural Gas	0	$0	74,535	$16,468	9.41	2022
Install Submetering System (kWh, NG, BTU Meters)	N/A	0	$0	0	$0	0.00	2020
Ground Loop Heat Pump (In process of Implementation)	Electricity & Natural Gas	-356,955	-$48,864	127,434	$27,679	-436.49	2019
2.13 megawatt (MW) Rooftop Solar	Electricity	128,950	$18,404	0	$0	13.58	2022
Totals		**1,724,532**	**$243,258**	**353,924**	**$77,686**		

Table 7. *Proposed Conservation Measures for the Oshawa Campus*

4.1.4. Geothermal Case Study

The Simcoe Geothermal Field and Energy Innovation Centre (EIC) project is part of the ongoing transformation of Durham College's (DC) energy infrastructure to support and implement sustainably focused initiatives on campus. Completed over a 12-month construction period, the new geothermal Ground Source Heat Pump (GSHP) system is designed to provide the majority of the heating and cooling requirements of the Gordon Willey building.

The Energy Innovation Centre houses the geothermal field manifold and pumping equipment for the closed loop of water and glycol. This new building with its viewing gallery, digital displays and interactive components acts as a living lab and provides new learning opportunities for students.

Fast Facts:

- *BTES is comprised of 150 boreholes*
- *Each borehole is 180 meters in depth*
- *Average temperature year-round at 2 meters below surface: 10.5 degrees Celsius*
- *Total length of piping for closed loop through BTES: Approximately 55 km (the distance from Oshawa to the CN Tower)*
- *Anticipated Greenhouse Gas emissions reduction: 64% for heating and cooling needs of Willey Building estimated at 894.42 tonnes CO_2 annually*
- *Durham College's Whitby campus has a 32-borehole Geothermal GSHP system*

Picture 2. *Geothermal System Construction*

Tapping Into The Earth's Resources

Geothermal energy is thermal energy generated and stored in the Earth. This energy, combined with heat exchange systems, can be used as an alternative to traditional oil- gas- or coal-fired heating, ventilation and air conditioning (HVAC) systems. Other industry terms for these systems are: geoexchange or earth energy systems. Borehole thermal energy storage (BTES) describes thermal energy storage underground through a series of boreholes and associated closed-loop of piping that carries a thermal conducting fluid, typically a mixture of water and glycol.

Greenhouse Gas Campus Retrofits Program

In 2018, the Ontario government announced a new funding program for Ontario post-secondary educational institutions to achieve greenhouse gas emissions relating to campus operations. Durham College received funding from this program to support a $9.1 M implementation of a new geothermal Ground Source Heat Pump system for its campus in North Oshawa, which was completed in 2019.

4.1.5. 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)	18,866,919	0%	19,223,873	-2%	18,168,045	4%	17,753,839	6%	17,142,386	9%	17,142,386	9%
Natural Gas (m^3)	1,273,999	0%	1,146,565	10%	1,109,268	13%	1,098,081	14%	977,410	23%	920,076	28%

***Table 8**. Forecast of Annual Utility Consumption for the Oshawa Campus*

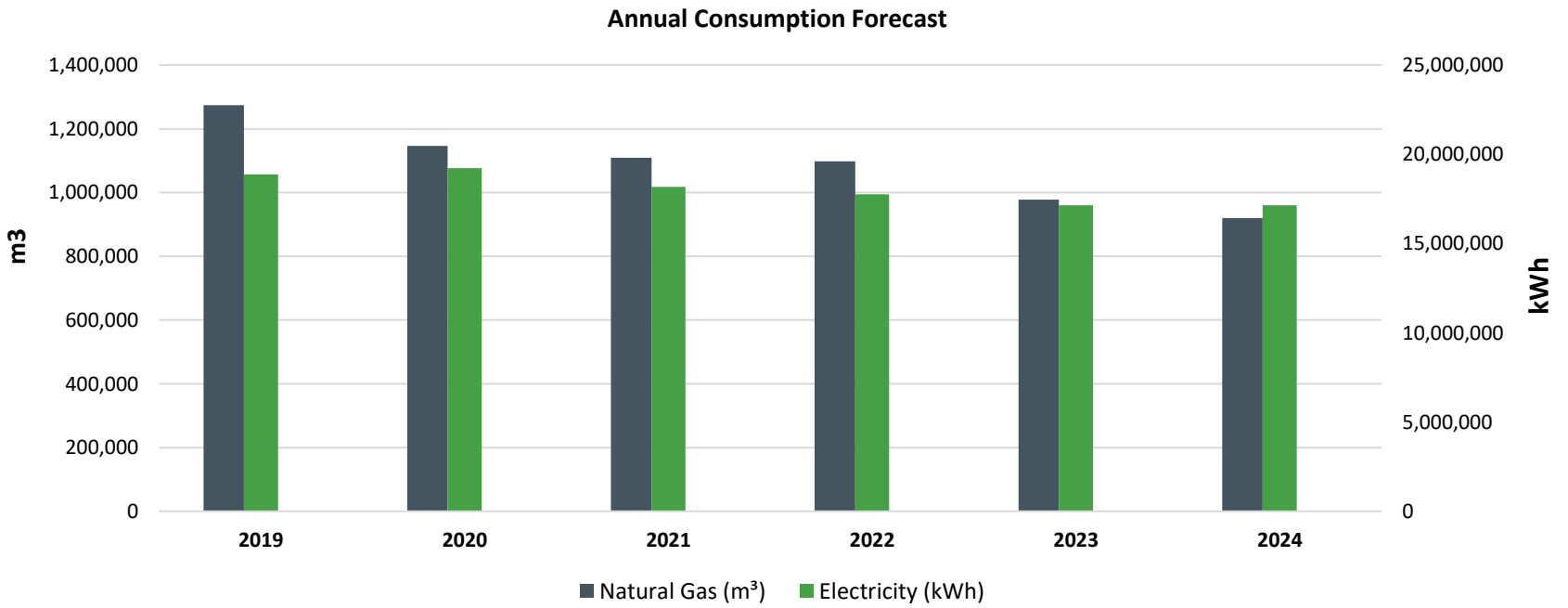

***Figure 7.** Forecast of Annual Utility Consumption for the Oshawa Campus*

4.1.6. 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. The percentage of reduction is based off the data from the baseline year of 2018.

GHG Emissions (tCO_2e)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	774	788	745	728	703	703
Natural Gas (scope 1)	2,408	2,167	2,097	2,075	1,847	1,739
Totals	**3,181**	**2,955**	**2,841**	**2,803**	**2,550**	**2,442**
Reduction from Baseline Year (2018)	**0%**	**7%**	**11%**	**12%**	**20%**	**23%**

Table 9. *Forecast of Annual Greenhouse Gas Emissions for the Oshawa Campus*

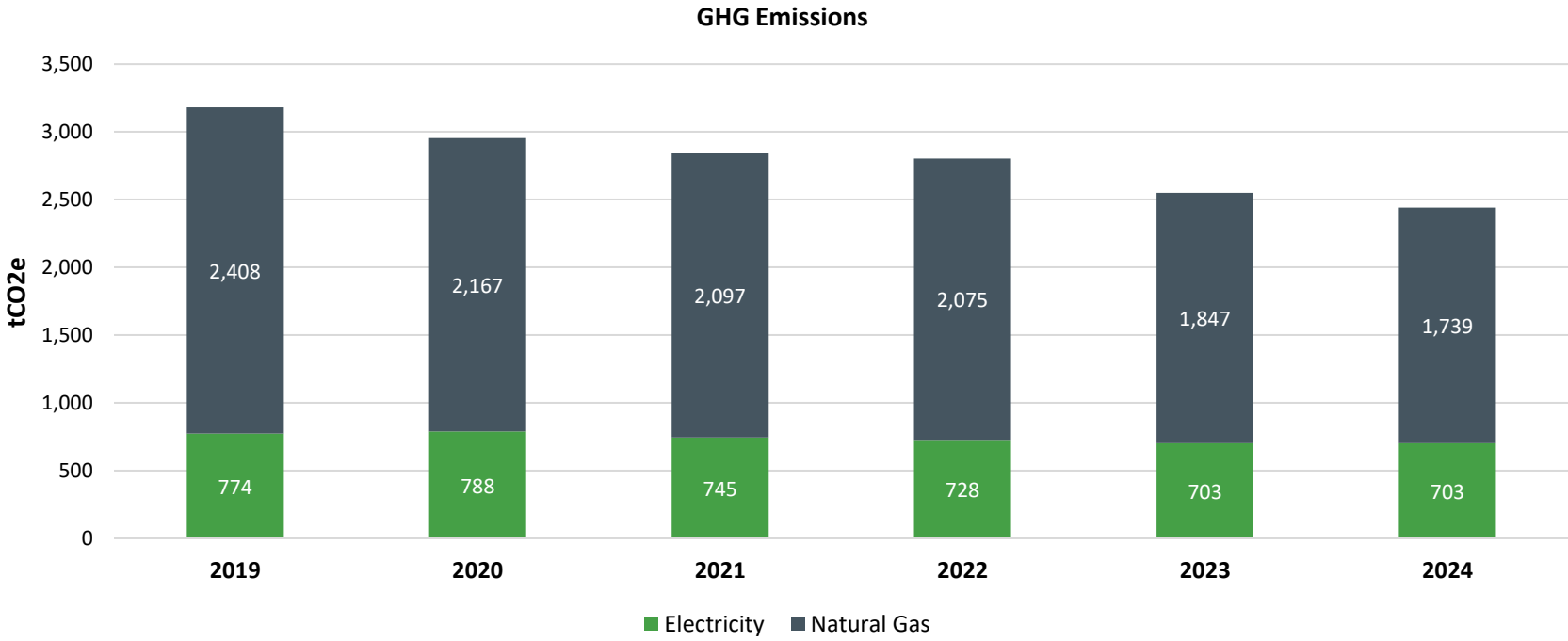

Figure 8. *Forecast of Annual Greenhouse Gas Emissions for the Oshawa Campus*

4.2. Whitby Campus

Picture 3. Whitby Campus

Facility Information	
Facility Name	**Durham College Whitby Campus**
Type of Facility	Post-Secondary Education Institution
Address	1610 Champlain Avenue, Whitby, ON
Gross Area (Sq. Ft)	240,619
Average Operational Hours Per Week	168

Table 10. Whitby Campus Facility Information

4.2.1. Utility Consumption Analysis

Utilities to the site are 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)	3,777,610	5,049,527	5,171,368	4,924,329	4,713,247	5,050,530
Natural Gas (m^3)	334,076	352,362	463,999	247,367	253,854	331,582

Table 11. *Historic Annual Utility Consumption for the Whitby Campus*

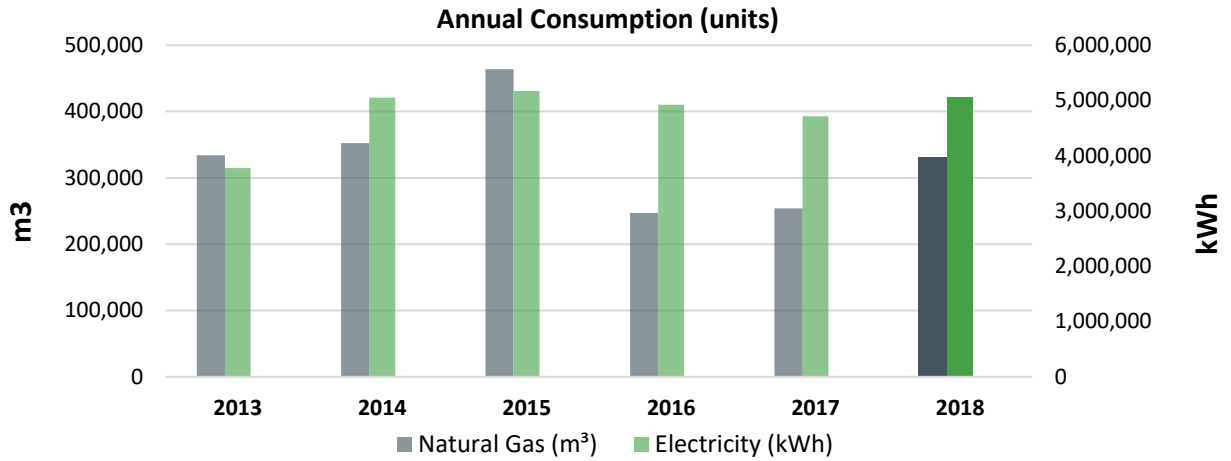

Figure 9. *Historic Annual Utility Consumption for the Whitby Campus*

4.2.2. GHG Emissions Analysis

The greenhouse gas emissions are calculated based on the energy consumption data analyzed in the following table.

GHG Emissions (tCO_2e)						
Utility Source	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Electricity (scope 2)	155	207	212	202	193	207
Natural Gas (scope 1)	631	666	877	468	480	627
Totals	**786**	**873**	**1,089**	**669**	**673**	**834**

Table 12. *Historic Annual Greenhouse Gas Emissions for the Whitby Campus*

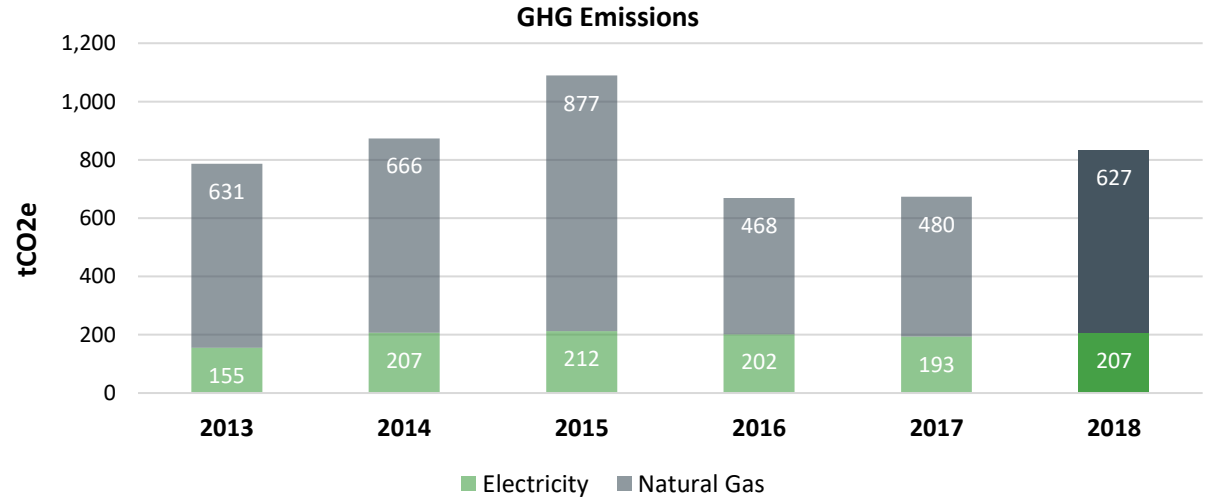

Figure 10. *Historic Annual Utility Consumption for the Whitby Campus*

4.2.3. Proposed Conservation Measures

Our energy analysis has revealed several conservation strategies for the facility. Whitby Campus' 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
		Electricity (kWh)	$	Natural Gas (m3)	$		
Lighting Upgrade	Electricity & Natural Gas	206,250	$28,629	-4,897	-$1,070	8.55	2020
Building Automation Recommissioning/Adjust Schedule	Electricity & Natural Gas	342,005	$47,473	39,662	$8,663	1.87	2020
Upgrade Selected AHUs (AHU-03 & AHU-07)	Electricity & Natural Gas	42,416	$5,970	4,429	$973	44.65	2021
Convert CAV AHUs to VAV	Electricity & Natural Gas	106,634	$15,219	10,838	$2,395	6.53	2022
Lighting & Ventilation Control Based on Classroom Occupancy (SW Bldg)	Electricity	154,159	$21,698	0	$0	6.68	2021
Weather Stripping and Caulking	Natural Gas	0	$0	16,579	$3,685	8.14	2023
Piping Insulation	Natural Gas	0	$0	24,869	$5,495	9.10	2022
Totals		**851,464**	**$118,989**	**91,480**	**$20,141**		

Table 13. *Proposed Conservation Measures for the Whitby Campus*

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. 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)	5,050,530	0%	5,050,530	0%	4,502,275	11%	4,305,700	15%	4,199,066	17%	4,199,066	17%
Natural Gas (m^3)	331,582	0%	331,582	0%	296,817	10%	292,388	12%	256,681	23%	240,102	28%

Table 14. *Forecast of Annual Utility Consumption for the Whitby Campus*

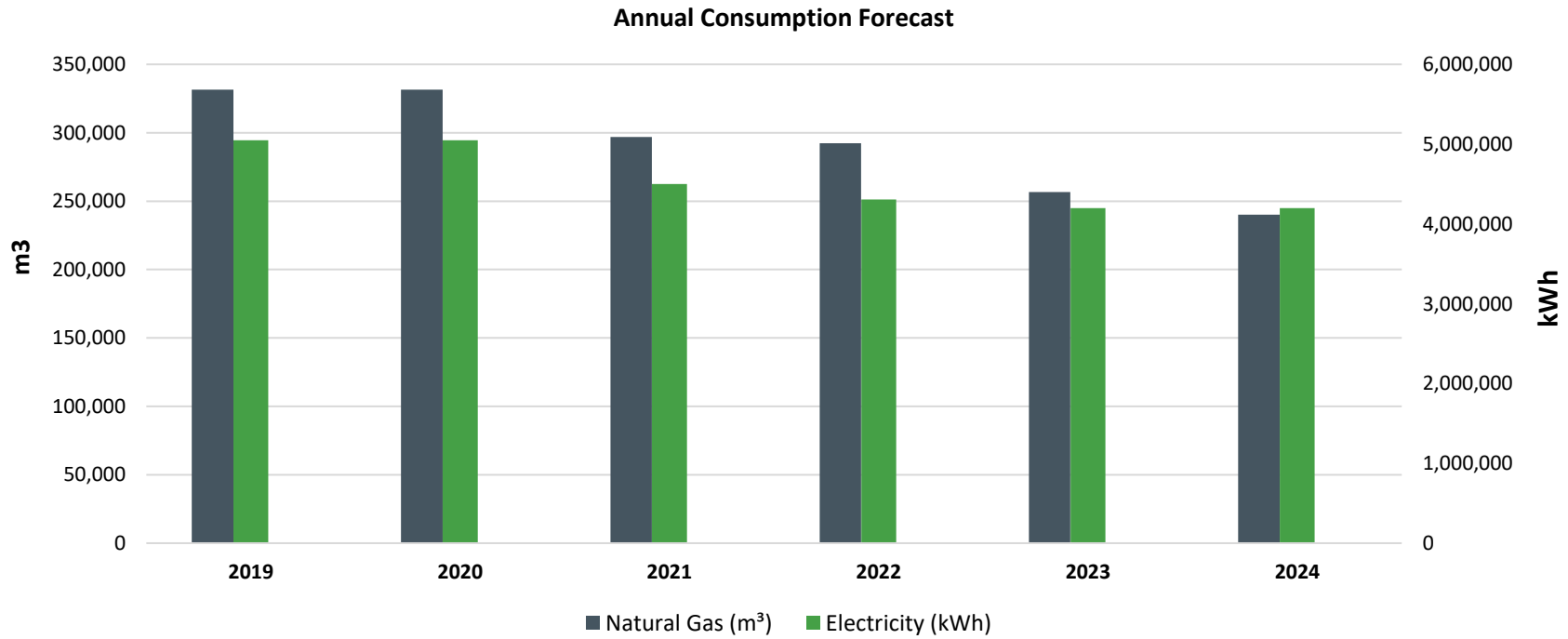

Figure 11. *Forecast of Annual Utility Consumption for the Whitby Campus*

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. The percentage of reduction is based off the data from the baseline year of 2018.

GHG Emissions (tCO_2e)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	207	207	185	177	172	172
Natural Gas (scope 1)	627	627	561	553	485	454
Totals	**834**	**834**	**746**	**729**	**657**	**626**
Reduction from Baseline Year (2018)	**0%**	**0%**	**11%**	**13%**	**21%**	**25%**

Table 15. *Forecast of Annual Greenhouse Gas Emissions for the Whitby Campus*

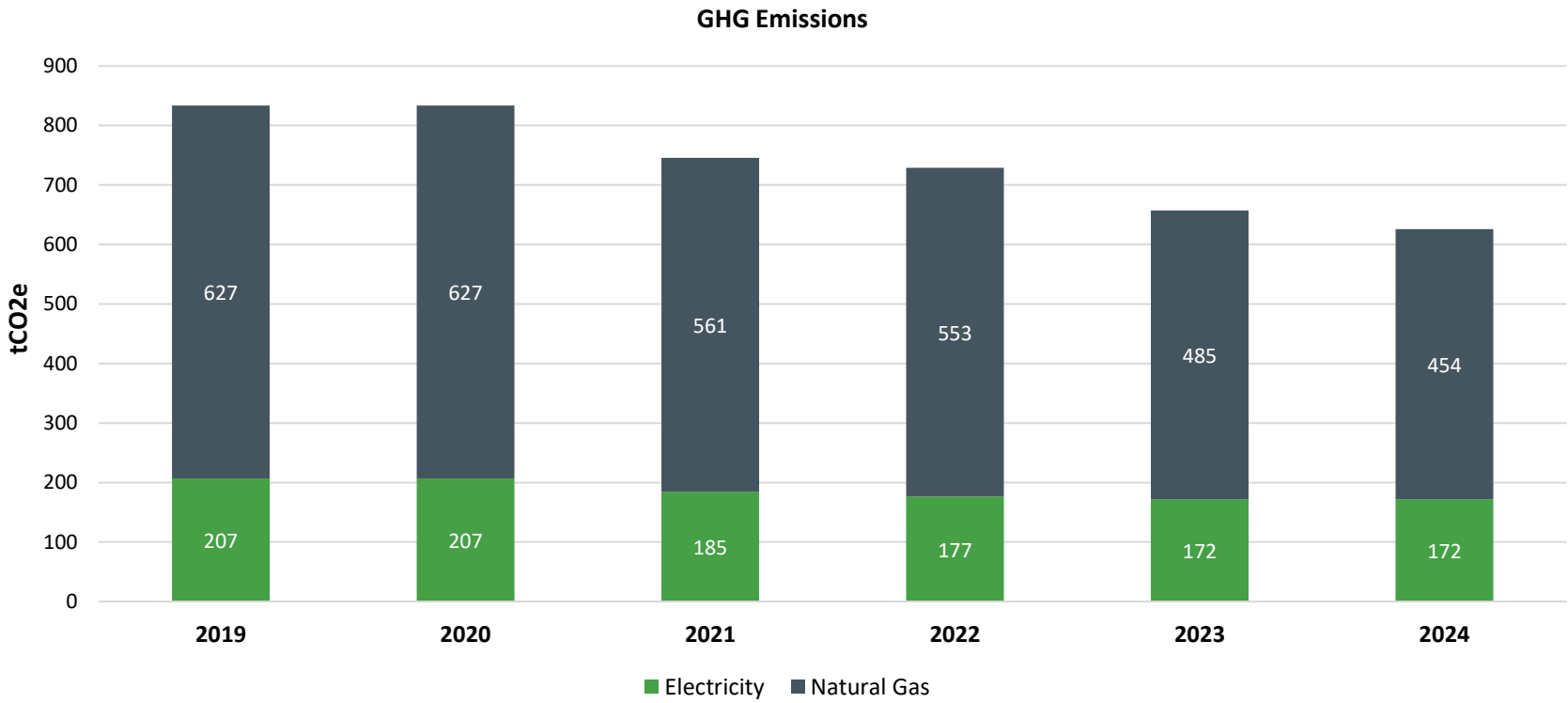

Figure 12. *Forecast of Annual Greenhouse Gas Emissions for the Whitby Campus*

5. College Outlook

5.1. Campus-Wide Utility Consumption

By implementing the energy conservation measures stated in the previous sections, in each respective campus, the campus-wide projected electricity and natural gas use could be forecasted based on the utility savings generated from individual measures. The campus-wide 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)	23,917,449	0%	24,274,403	-1%	22,670,320	5%	22,059,539	8%	21,341,452	11%	21,341,452	11%
Natural Gas (m^3)	1,605,581	0%	1,478,147	8%	1,406,085	12%	1,390,469	13%	1,234,092	23%	1,160,178	28%

Table 16. *Forecast of Annual Utility Consumption for All DC Sites*

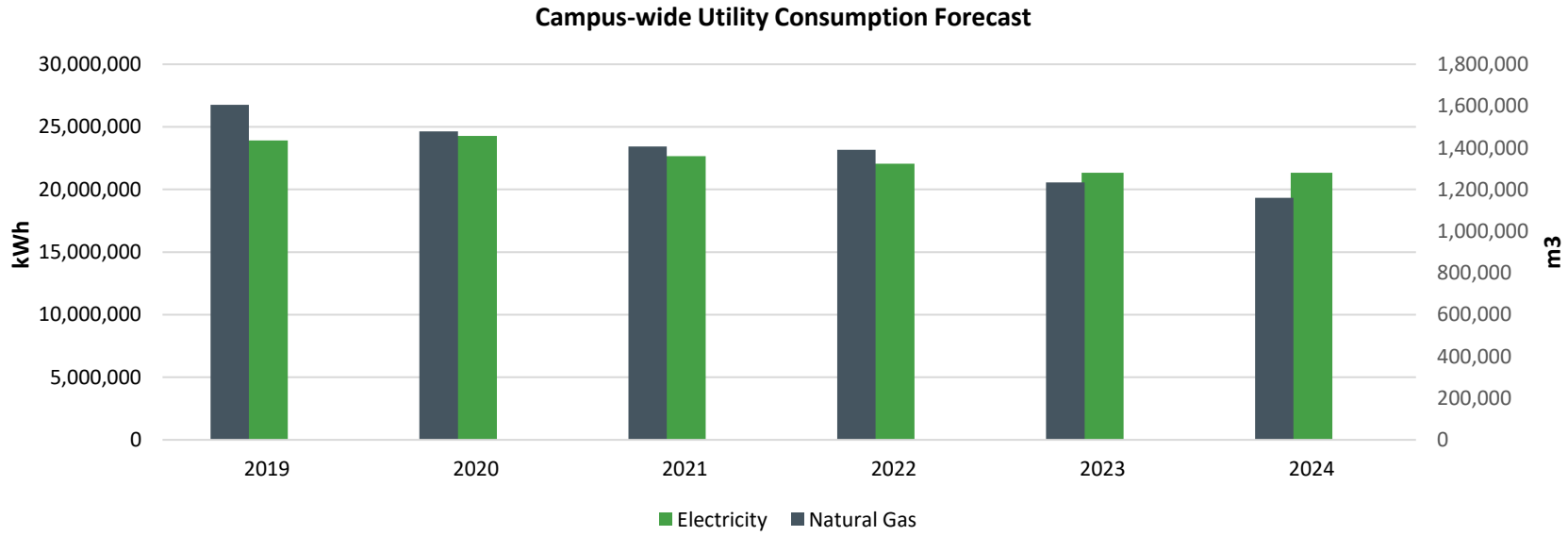

Figure 13*. Forecast of Annual Utility Consumption for All DC SItes*

5.2. Campus-Wide GHG Emissions

The organizational greenhouse gas emissions are calculated based on the forecasted campus-wide energy consumption data analyzed in the previous section and are tabulated in the following table. The percentage of reduction is based off the data from the baseline year of 2018.

GHG Emissions (tCO23)						
Utility Source	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Electricity (scope 2)	981	995	929	904	875	875
Natural Gas (scope 1)	3,035	2,898	2,869	2,573	2,193	2,193
Totals	**4,015**	**3,789**	**3,587**	**3,532**	**3,207**	**3,068**
Reduction from Baseline Year (2018)	**0%**	**6%**	**11%**	**12%**	**20%**	**24%**

Table 17. *Forecast of Annual Greenhouse Gas Emissions for All DC Sites*

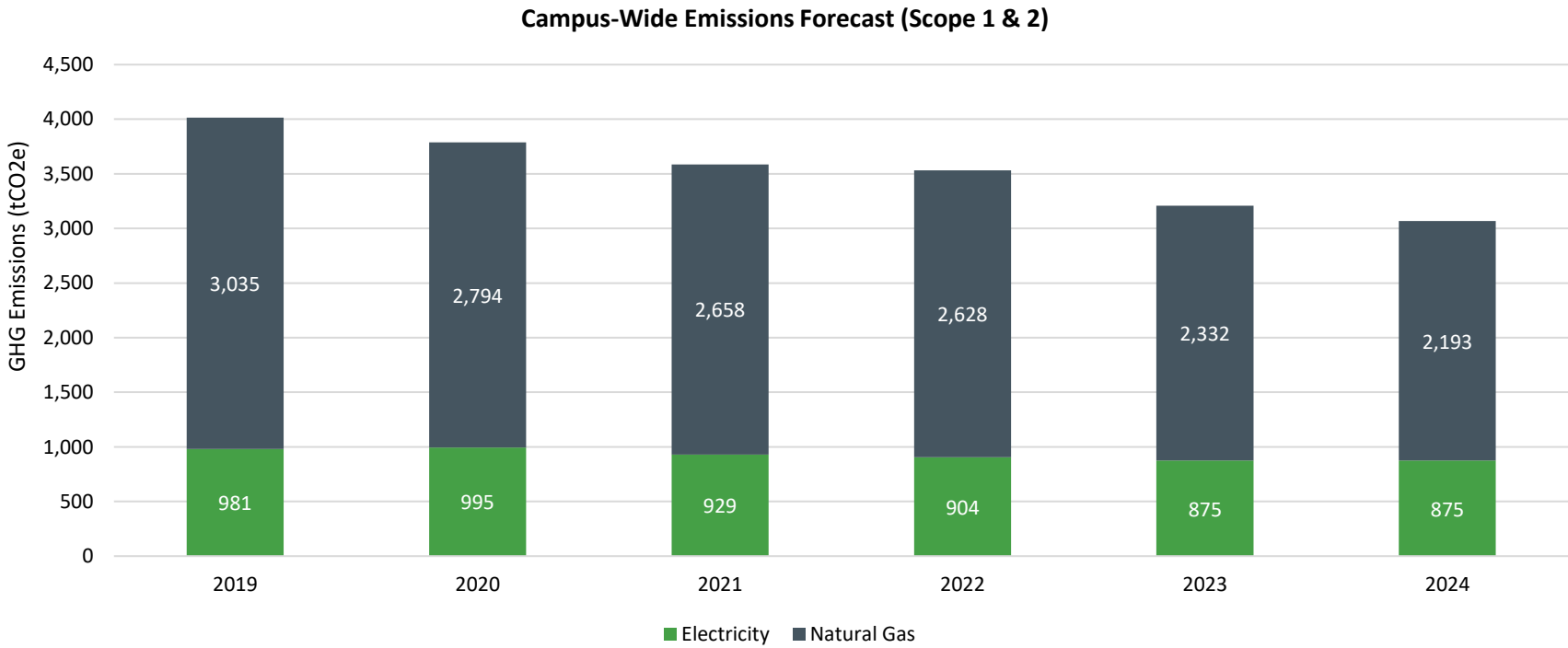

Figure 14. *Forecast of Annual Greenhouse Gas Emissions for All DC Sites*

6. Closing Comments

Thank you to all who contributed to Durham College's Energy Conservation & Demand Management Plan. We consider our facility a primary source of education, 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 educational services while integrating environmental stewardship into all aspects of facility operations.

On behalf of the Senior Management Team here at Durham College, we approve this Energy Conservation & Demand Management Plan.

This ECDM plan was created through a collaborative effort between Durham College 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 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.
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

Figures

Tables