

EVIDENCE OF THE CITY OF GUELPH

Exhibit 1

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EB-2025-0058

July 2, 2025

EXHIBIT LIST

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CERTIFICATION OF EVIDENCE

The undersigned, being City of Guelph (“City”) Junior Solicitor, Kip Phillips, hereby certifies for and on behalf of the City that:

1. I am a Junior Solicitor with the City.
2. This certificate is given pursuant to the Ontario Energy Board’ (the “OEB”) Filing Requirements under s.13.8 of the OEB Rules of Practice and Procedure.
3. This evidence is submitted in support of the City’s Intervention in the Application to renew the Model Franchise Agreement in OEB file EB-2025-0058 is accurate, consistent, and complete to the best of my knowledge.
4. The documents filed in support of the City's above referenced application do not include any personal information (as that phrase is defined in the Freedom of Information and Protection of Privacy Act), that is not otherwise redacted in accordance with rule 9A of the OEB’s Rules of Practice and Procedure.

DATED this 2nd day of July, 2025

Sincerely,

KIP PHILLIPS

Kip Phillips, Junior Associate Solicitor
Legal, Realty and Court Services, Corporate Services
Location: City Hall

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EVIDENCE OF THE MUNICIPALITY OF GUELPH
AFFIDAVIT OF TIJO JOSEPH

I, Tijo Joseph of the City of Guelph, in the County of Wellington and Province of Ontario,
MAKE OATH AND SAY AS FOLLOWS:

1. I am a Project Manager of the Energy and Climate Change division under the Facilities and Energy Management department of The Corporation of the City of Guelph (the "**City**"). I, as a member of City Staff represent the City. As a Project Manager of the Energy and Climate Change division, I have been involved with the matters that are the subject of the Application herein, and as such I have knowledge of the matters to which I hereinafter depose. The matters deposed to herein are within my personal knowledge except where otherwise indicated. Where I indicate that I have obtained information from other sources, I believe that information to be true. Copies of documents attached hereto and marked as Exhibits are true copies of the documents so identified.
2. I am advised by the City's Legal department and verily believe that the amendments the City seeks to the Model Franchise Agreement ("**MFA**") are intended to address the indirect subsidy granted to gas distributors, and to not constrain the City under a long-term agreement, which would inhibit the City's autonomy over its own property and its ability to prioritize and implement its climate policy goals. City Council as representatives of the electors have approved policy commitments to energy and climate change and the electors

have not assented to the MFA. The amendments seek to allow the City to advance its Council approved policy commitments, including the City's goals to reduce the use of fossil fuels, reduce the burden of Enbridge's use of City property and assets, and empower citizens to have access to municipal infrastructure that embraces energy efficiency and climate mitigation and adaptation.

3. The City has several policy commitments to energy and climate change, and values offering consumers different choices regarding power generation and energy. Policy commitments envision a sustainable future in the City, and that energy is a key part to reducing the impacts of climate change to the City. These policy commitments include among others:
 - a) The 2007 Community Energy Plan;
 - b) The 2018 Community Energy Initiative (CEI) Update;
 - c) The 2018 City's Corporate Commitment to Achieve 100% Renewable Energy by 2050;
 - d) The 2021 City's Commitment to the Race to Zero Climate Pledge;
 - e) The 2025 Guelph's Community Call to Climate Action report;
 - f) The City's Indigenous Relations Framework; and
 - g) The City's Future Guelph: Strategic Plan 2024 – 2027; and
 - h) The City's Official Plan.
4. The City released a Community Energy Plan (CEP) in 2007, the first in Canada. Attached at Exhibit "1", Tab "3", Schedule "1" is a true copy of the City's CEP.

5. In 2010, the CEP was renamed the Community Energy Initiative (CEI) to represent a transition to implementation aspects. On May 28, 2018, A CEI update was presented to City Council with Council accepting all the recommendations made in the CEI update. Under the CEI update, twenty potential actions to reduce energy use and achieve greenhouse gas reduction were short-listed, and priority ranked. Also, as an outcome of the CEI update, a new target was established of becoming a net zero carbon community by 2050. Attached at Exhibit “1”, Tab “3”, Schedule “2” is a true copy of the City Council Meeting Minutes of the 2018 CEI Update.
6. On May 6, 2025, the Community Call to Climate Action was presented and a Staff Report to City Council, and encapsulates these previous climate commitments. It was released providing key focus areas and priority climate actions to reduce greenhouse gas emissions throughout the community that work towards the City's Race to Zero targets. Attached at Exhibit “1”, Tab “3”, Schedule “3” is a true copy of the City Staff Report and Attached at Exhibit “1”, Tab “3”, Schedule “4” is a true copy of the Community Call to Climate Action and Supplementary Backgrounder.
7. On May 27, 2025, City Council passed a motion to approve staff actions to support the community in taking collective climate action as described in Guelph’s Community Call to Climate Action. Attached at Exhibit “1”, Tab “3”, Schedule “5” is a true copy of the Meeting Minutes of the City Council Meeting of Guelph’s Community Call to Climate Action.
8. On May 28, 2018, City Council unanimously passed the Corporate 100% Renewable Energy Target to achieve one hundred percent of the Corporation’s energy needs through renewable sources by 2050. Attached at Exhibit “1”, Tab “3”, Schedule “6” is a true copy

of City Council's Meeting Minutes for the 2018 City's Corporate Commitment to Achieve 100% Renewable Energy by 2050.

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9. On May 6, 2019, City Staff presented a report on the Corporate 100% Renewable Energy Target at the Committee of the Whole, and on May 27, 2019, City Council passed the following motions:

1. That the City of Guelph acknowledges the impacts of climate change and joins citizens, cities and countries around the world in acknowledging a climate crisis.
2. That in response, commits to the collaborative implementation of the Community Energy Initiative net zero and corporate renewable energy goals.
3. That the Community Energy Initiative/Our Energy Guelph Pathway and 100RE to Net Zero Action Plan be sent to our respective Provincial and Federal Ministers of the Environment as an example of community collaboration to combat the climate crisis.
4. That all future reports to council contain a section titled Climate Change Implications that will identify how the recommendations will contribute toward meeting the objectives of the CEI and/or Corporate Energy Plan and that staff report back with a policy and procedure for reporting.
5. That the Corporate 100% Renewable Energy Target (100RE Target) definition be received, adopted and reviewed every 5 years.
6. That staff be directed to develop a capital reserve fund strategy to support the Corporate energy optimization projects through the 2020 capital budget process.

7. That the capital and operating costs to enable progress towards the 100RE Target be referred to the 2020 budget process.

8. That staff provide a Corporate Energy Progress Report on an annual basis.

9. That staff through their annual reporting to Council, provide Council with further opportunities and initiatives to realize the 2050, 100% renewable energy target sooner.

Attached at Exhibit “1”, Tab “3”, Schedule “7” is a true copy of the Committee of the Whole Meeting Minutes and the Report for the City’s Corporate Commitment to Achieve 100% Renewable Energy by 2050 and Attached at Exhibit “1”, Tab “3”, Schedule “8” is a true copy of the City Council Meeting Minutes for the City’s Corporate Commitment to Achieve 100% Renewable Energy by 2050.

10. On December 6, 2021, City Council reaffirmed its commitment to fighting climate change at the Committee of the Whole to declare support for the United Nation’s Cities Race to Zero campaign pledging for the City to reach net-zero in the 2040s or sooner, or by mid-century at the latest and setting an interim target to reduce per capita community carbon emissions by 63% against the 2018 baseline. Attached at Exhibit “1”, Tab “3”, Schedule “9” is a true copy of the 2021 Committee of the Whole Minutes of the City’s Commitment to the Race to Zero Climate Pledge.
11. On December 20, 2021, the resolution for the City’s Race to Zero Climate Pledge to become a net zero carbon community by 2050 was approved by City Council as follows:

1. The City of Guelph declares support for the Cities Race to Zero as part of the United Nation's Race to Zero campaign by joining hundreds of other cities in fighting climate change.

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2. The City of Guelph pledges to the following commitments:

- We reaffirm our acknowledgement of the global climate crisis.
- We are committed to doing our part to keep global heating below the 1.5C goal of the Paris Agreement.
- We are committed to putting inclusive climate action at the centre of all urban decision-making, including the City of Guelph Official Plan, to create thriving and equitable communities for everyone.
- We are committed to including our partners — community organizations, businesses, school boards, public institutions, labour unions, financial institutions, Indigenous leaders, and the public — to join us in recognizing the global climate crisis and help us deliver on science-based action to overcome it.

3. The City of Guelph pledges to reach (net-zero in the 2040s or sooner, or by mid-century at the latest, in line with global efforts to limit warming to 1.5C.

4. The City of Guelph creates four-year interim climate change targets that fall within each city council's term of office. The first set of interim targets will be established by the second quarter of 2022.

5. The City of Guelph modify our 2030 target in order to achieve Guelph's fair share of the global 50 per cent reduction in CO2 identified in the IPCC Special Report on Global Warming of 1.5C.

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6. The City of Guelph plan at least one inclusive and equitable climate action as listed on www.citiesracezero.org that will help to place our city on a resilient pathway consistent with the 1.5C objective of the Paris Agreement and begin implementation no later than the fourth quarter of 2022.

7. The City of Guelph report progress annually, for the entire city of Guelph (and continue reporting on the corporation) beginning no later than 2022.

8. The City of Guelph empower all city staff to bring their ideas forward to fight climate change, engage and train staff on best practices, and allocate funding to reach our approved goals.

9. The City of Guelph will offer regular consultation meetings with treaty partners and local Indigenous elders to review climate initiatives.

10. That staff be directed to report back on the resources and possible funding strategies to meet new "fair share" interim targets as determined by the climate target methodologies of the Cities Race to Zero, with an end target date of 2050 or sooner, for consideration prior to the 2023 budget.

Attached at Exhibit "1", Tab "3", Schedule "10" is a true copy of the City Council's Meeting Minutes of the Race to Zero Climate Pledge.

12. Further, the City's Future Guelph: Strategic Plan 2024-2027 includes a commitment to the environment and a leader in climate action, which includes reducing energy use and greenhouse gas emissions, make homes more energy efficient by implementing the Guelph Greener Homes program, and encourage community participation in Race To Zero. This Plan includes specific action items impacted by this Application. This includes item 9.1, which states "Establish a resilient and sustainable city by investing in climate change actions." It also includes, item 9.2, which states "Reduce energy use and greenhouse gas emissions." Attached at Exhibit "1", Tab "3", Schedule "11" is a true copy of the Future Guelph: Strategic Plan 2024-2027.
13. The City's Indigenous Relations Framework includes protecting the environment for future generations, which also includes an UNDRIP commitment to manage natural resources and ecosystems to ensure long-term health and quality for future generations. Attached at Exhibit "1", Tab "3", Schedule "12" is a true copy of the City's Indigenous Relations Framework.
14. The City's Official Plan embraces energy sustainability and climate change resiliency as one of the purposes of the Official Plan. These objectives include reducing the need for fossil fuels and addressing climate change including both mitigation and adaptation. Mitigation involves actions to reduce greenhouse gas emissions and actions to reduce or delay climate change. Guelph's approach to mitigation is embedded throughout this Plan including policies addressing the Natural Heritage System, transportation, urban structure, urban design and land use. Attached at Exhibit "1", Tab "3", Schedule "13" is a true copy of the City's Official Plan.

15. I am advised by the City's Legal department and verily believe that if the MFA amendments sought by the City are not granted, the City's ability to advance and achieve the foregoing Council-approved policies, pledges and commitments would be impeded. These policies, pledges and commitments are founded in community engagement.

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DATED at the Municipality of Guelph, in the Province of Ontario this 27th day of June 2025.

AFFIRMED BEFORE ME at the City of
Guelph in the County of Wellington,
Province of Ontario this 27 day of June, 2025



Commissioner for Taking Affidavits



TIJO JOSEPH

This is Exhibit "1", Tab "3", Schedule "1" referred to in the Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of Guelph, in the Regional Municipality of Wellington, before me at the City of Toronto, in the Province of Ontario, on June 27, 2025 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.



Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3

Schedule 1



Community Energy Plan



City of Guelph Community Energy Plan

ACKNOWLEDGEMENTS

The team preparing the recommended CEP would like to acknowledge the efforts made by the following groups, individuals, and organizations that have made invaluable contributions to the development of the Community Energy Plan.

Guelph Community Energy Plan Consortium***Co-chairs***

Art Stokman, President, Guelph Hydro Electric Systems Inc.

Janet Laird, Director, Environmental Services Department, City of Guelph

Consortium Liaison

Martin Lavictoire, Conservation and Efficiency Technician, City of Guelph

Representatives

Astrid Clos, Guelph and District Homebuilders' Association

Karen Farbridge, Office of VP Research, University of Guelph / Mayor

Ken Hammill, Friends of Guelph

Mike Krewski, Channel Account Manager, Commercial/Industrial Markets, Union Gas

John Loncar, Account Manager, Commercial/Industrial marketing, Union Gas

Janette Loveys Smith, Manager Community Development, City of Guelph

Craig Manley, Manager, Community Design and Development Services Department, City of Guelph

Don McLaughlin, Director, Maintenance & Energy Services, Physical Resources, University of Guelph

Gillian Maurice, Sustainability Coordinator, Physical Resources, University of Guelph

Peter Rodway, Wellington Catholic District School Board

Charles Simon, Architect & Planner, Architecture Planning Research

Ian Smith, President, Guelph Chamber of Commerce

Tom Smith, Chief of Operations, Upper Grand School Board (now with the Grand River Conservation Authority)

Robert Cameron, Manager of Plant Operations, Upper Grand School Board

Rick Thompson, Board Member, Guelph Hydro Electric Systems

Andrew Lambden, Guelph Development Association

Individual Acknowledgements

The participation and assistance provided by a large number of individuals and organizations who in various ways have given both their time and knowledge to assist the CEP project has been invaluable.

Participation in CEP Planning Meetings

Dan Amyot, GIS Supervisor, Guelph Hydro Electric Systems

Laura Bailey, Councilor, City of Guelph

Peter Cartwright, Manager of Economic Development Services, City of Guelph

Lloyd Cummins, Department Head, Energy & Utilities, Physical Resources, University of Guelph

Janice Folk-Dawson, President of CUPE Local 1334, University of Guelph

Peter Henderson, VP of Finance, Guelph Hydro Electric Systems

Kathleen Hyland, Facilities Coordinator, Family Housing, University of Guelph

City of Guelph Community Energy Plan

Mike Joaquin, Senior System analyst, Guelph Hydro Electric Systems
Geoffrey Keyworth, Transportation Planner, City of Guelph
Larry Kotseff, Chief Administrative Officer, City of Guelph
Paul Kraehling, Senior Policy Planner, City of Guelph
Don McLaughlin, Director, Facilities & Energy Services, University of Guelph
Nicole Mailloux, VP/Human Resources, Guelph Hydro Electric Systems
Arlen Molyneaux, Director of Engineering, Guelph Hydro Electric Systems
Paul Moore, Permit and Zoning Administrator, City of Guelph
Carrie Musselman, Environmental Planner, City of Guelph
Katie Nasswetter, Planner, City of Guelph
Ian Panabaker, Heritage/Urban Design Planner, City of Guelph
Ken Sleeper, Utility Service Manager, Union Gas, Guelph
Warren Stiver, School of Engineering, University of Guelph
Nancy Sullivan, VP Finance & Administration, University of Guelph
Jim Riddell, Director of Community Design and Development Services, City of Guelph
Jasmine Urisk, Director, Canadian Energy Partnership for Environmental Innovation
Matt Weninger, Director-Metering & Communications, Guelph Hydro Electric Systems
Alan Wildeman, VP Research, University of Guelph
Mike Wittemund, Planning & Standards Supervisor, Guelph Hydro Electric Systems

Various Individual interactions with Consortium and CEP Team

Michael Bartholew Technical Services, City of Guelph
Ken Church, Manager, Community Planning Sustainable Buildings & Communities, CETC-Ottawa, Natural Resources Canada
Goretty Dias, Atmospheric Scientist, Environmental Consultant
Gordon Drewit, Research Scientist, Department of Land Resource Science, University of Guelph
Don Eaton, Executive Director, Elora Centre for Environmental Excellence
Khosrow Farahbakhsh, Assistant Professor, School of Engineering, University of Guelph
Shaun Finnegan, Sales Account Manager, Business Development, Mortgage Property Assessment Corporation
Susan Frasson, WC Woods, Guelph
Evan Jones, 3p Analysis and Consulting
Vik Kirsch, Reporter, Guelph Mercury
Chantelle Leidl, Graduate Student, School of Engineering, University of Guelph
Glynis Logue, Guelph Environmental Leadership
Lynne McInnis, Executive Assistant – Operations, Upper Grand District School Board
Wayne Murch, Billing and Settlements Supervisor, Guelph Hydro Electric Systems
Andrew Oding, Research and Development, Reid's Heritage Homes
Julie Owens, Senior Planning Technician, City of Guelph
Tara Sprigg, Senior Communications Officer, City of Guelph
Jim Stokes, Manager of Realty Services, Corporate Services, City of Guelph
Carol Tanney, Executive Assistant, Guelph Hydro Electric Systems
Cameron Walsh, Manager, Wastewater Services, City of Guelph
John Woods, ex-President, WC Woods, Guelph

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Civic Leadership

The support of both the former Mayor of Guelph, Kate Quarrie, and of the newly elected Mayor, Karen Farbridge, for the CEP process and goals is acknowledged.

Workshop Participants

The Consortium would also like to acknowledge the many other participants at a number of briefing sessions and workshops held through 2006 from many organizations and companies including the University of Guelph, students from the City's High Schools, local industry, small and medium enterprises, environmental organizations, the architectural and construction industry, and last but certainly not least a large number of individuals who participated at community workshops.

The following photo from the last community workshop showing citizens actively and passionately engaged in ensuring Guelph has a sustainable energy future is probably the most appropriate acknowledgement.



Community Energy Plan workshop held at River Run Center – December 2006. (See Appendix 7)

City of Guelph Community Energy Plan

**CITY OF GUELPH
COMMUNITY ENERGY PLAN**

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City of Guelph Community Energy Plan

1. DEFINITIONS AND ABBREVIATIONS

This is a summary of some of specific terms and abbreviations used in the report. It is not exhaustive. In many cases, terms are defined in the body of the text and are not repeated here. A good detailed list of energy related terms and usages can be found on the Natural Resources Canada website.¹

Term	Definition
Baseline	Estimation of the present (2005) energy and water use and greenhouse gas creation
Biomass	Vegetation such as wood, agricultural waste, catering waste etc with the potential to be used as a fuel
Building Code	Legally required construction standards
Built Infrastructure	General term referring to all the homes, commercial and institutional buildings and industrial buildings in the City
Carbon dioxide (CO ₂)	The commonest form of greenhouse gas. Over 90% of manmade greenhouse gas emissions are from the use of energy.
CEP	See Community Energy Plan
CEP Consortium	Group in Guelph guiding the development of the CEP representing multiple parts of the community
CHP	See cogeneration
CO ₂ (equiv)	Greenhouse effect of the other five greenhouse gases identified in the Kyoto Treaty expressed in equivalents of carbon dioxide. (see www.unfccc.org)
Cogeneration	Generating electricity in such a way that most of the heat produced is usefully used
Combined Heat and Power	See cogeneration
Commercial Buildings	Nonresidential buildings generally owned or operated by for-profit entities
Community Energy Plan	Plan to guide the long term efficiency of energy and water use in Guelph for the coming two to three decades
Cooling Degree Days	A measure of how hot a location was over a period, relative to a base temperature. In this report, the base temperature is 18.0°C and the period is one year. If the daily average temperature exceeds the base temperature, the number of cooling degree-days for that day is the difference between the two temperatures. However, if the daily average is equal to or less than the base temperature, the number of cooling degree-days for that day is zero.
Daylighting	Designing buildings to maximize the use of natural daylight to reduce the need for electricity
District cooling	Cooling services delivered via district energy systems
District energy	Systems that deliver heating or cooling to energy consumers in the form of chilled or hot water, or (in older systems) steam.
District heating	Heat services delivered via district energy systems

¹ See http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data_e/glossary_e.cfm?attr=0

City of Guelph Community Energy Plan

Electrical Conversion Losses	The difference between the energy value of the fuel used to make electricity and the energy value of the electricity itself.
EU	European Union
Fossil Fuels	Combustible material obtained from below ground and formed during a geological event.
GDP	See Gross Domestic Product
Geothermal systems	Systems that use the relatively constant temperature of the ground a few meters down to cool buildings in summer and heat them in winter.
GHG	See Greenhouse Gases
Golden Triangle	Term referring to the area bounded by Kitchener, Waterloo and Guelph
Greenhouse Gases	A greenhouse gas absorbs and radiates heat in the lower atmosphere that otherwise would be lost in space. The main greenhouse gases are carbon dioxide (CO ₂), methane (CH ₄), chlorofluorocarbons (CFCs) and nitrous oxide (N ₂ O). The most abundant greenhouse gas is CO ₂ - Carbon dioxide.
Gross Domestic Product	The total value of goods and services produced by a country during a given year.
GWh	Gigawatt-hour – unit of electrical energy equals the use of 1 thousand million watts of electrical energy in one hour
GWh _e	Gigawatt-hour-equivalent - unit of energy from any source equivalent to one kilowatt-hour of electricity. Used to get a standard measurement for comparison of different forms of energy
Heating Degree Days	A measure of how cold a location was over a period, relative to a base temperature. In this report, the base temperature is 18.0°C and the period is one year. If the daily average temperature is below the base temperature, the number of heating degree-days for that day is the difference between the two temperatures.
Institutional Buildings	Nonresidential buildings generally owned by public administration, education, public or private healthcare facilities and other not-for-profit entities.
kWh	Kilowatt-hour – unit of electrical energy used as the basic billing unit and equals the use of 1 thousand watts of electrical energy in one hour
kWh _e	Kilowatt-hour-equivalent - unit of energy from any source equivalent to one kilowatt-hour of electricity. Used to get a standard measurement for comparison of different forms of energy
Kyoto Treaty	International Treaty ratified by Canada and most other industrialized countries with mandatory targets to reduce man-made greenhouse gases primarily through reduced use of fossil fuels
LEED	Leadership in Energy and Environmental Design - A voluntary system for rating buildings based on their environmental performance including energy and water use. Originally developed by a non-profit group – US Green Buildings Council.
Light vehicle	Vehicles with a weight less than 3,855 kg and includes motorcycles, cars, SUV's and pickup trucks
MWh	Megawatt-hour – unit of electrical energy equals the use of 1 million watts of electrical energy in one hour
MWh _e	Megawatt-hour-equivalent - unit of energy from any source equivalent to one megawatt-hour of electricity. Used to get a standard measurement for comparison of different forms of energy
Per Capita or /capita	For each person in the total population being considered

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Potable Water	Water that has been treated and delivered via public distribution and is considered safe for human consumption
Rainwater Harvesting	Systematically gathering rainwater to use for non-potable applications and to minimize the need to manage as storm water runoff
Smart Growth	Approach to developing areas of a cities to use minimum resources, to maximize social interactions with a balanced mix of demographics
SMART Meters	Energy meters (heat/electricity/cooling) capable of gathering energy use patterns, applying different tariffs depending on time of day and use level, and capable of being integrated into wider information and control systems
Solar Heating Systems	Systems that collect the heat of the sun to warm buildings or make domestic hot water
Solar Photovoltaic Systems (PV)	Systems that convert the light of the sun into electricity either for use locally or for delivery to the wider grid
Sustainability	Meets the needs of the present generation without compromising the ability of future generations to meet their own needs
tonne	Metric Ton equal to 1000 kilograms – mostly used in this report as a measure of greenhouse gas emissions

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2. EXECUTIVE SUMMARY

For over two centuries, the ready availability of low cost energy has allowed the world's industrialized countries to achieve unprecedented levels of well being and prosperity. Recent dramatic increases in costs and price volatility are putting the spotlight globally on how effectively we use energy. The rapid growth of China and India is putting further pressure on the world's energy supplies and climate. Despite its plentiful energy resources, Canada is increasingly exposed to the full force of the global energy market pressures and can look forward to energy costs trading upwards combined with pricing uncertainty.

The evidence is growing that the human use of energy is causing greenhouse gas emissions that are beginning to have significant effects on the climate. Recent opinion polls indicate that this is now viewed as the most critical issue for most Canadians, underlined by the renewed political commitment to meet international greenhouse gas emissions targets.

Over half of the world's population lives in cities, and in Canada that proportion is closer to 80%. Of all the energy used in Canada, over half is for buildings, homes, and transportation within cities. Homes and buildings use over 30% of all energy in the country and consume more than half of all the electricity. Cities are increasingly recognizing that the quality of life and competitiveness will in part be driven by how effectively they manage the use of their energy and water resources.

Guelph's leaders recognized the growing importance of effective management of energy and water to the economy and environment, and in 2004 formed a Consortium to proactively develop a community energy plan. The Consortium represents all facets of the community including the administration, academia, business, the gas and electric utilities, and other community groups. In 2006, the Consortium decided to formalize a long-term Community Energy Plan (CEP) which would guide the city's energy future for years to come. The CEP team had a balanced mix of local and global expertise ensuring the plan incorporated the best elements of urban energy management from around the world.

Guelph, with its current population of 115,000, plus an additional 18,000 students during the academic year, is a thriving town well situated in the "Golden Triangle", an area to the west of Toronto that is attracting significant growth. Guelph's population is expected to grow to 180,000, probably within its current boundaries, supported by significant commercial and industrial development.

In rough numbers, the growth will add about 20,000 homes and somewhere between 400,000 and 500,000 square meters of non-residential construction, along with significant industrial growth.

To support this growth, the city has made a commitment to implement an energy plan that will ensure the long-term competitiveness and environmental performance of the city. The Guelph CEP was developed to be much more than an inspirational statement. It was created very much with implementation in mind. For this reason the team looked at success stories from the USA, Canada and Europe to adopt the best ideas that had clearly worked elsewhere. All of these success stories underlined the need to take a long-term, multi-decade view and to have community leadership that ensured long-term, consistent implementation of the basic strategies year after year. Another key element was to see the energy supply of the city as an integrated whole.

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The overall vision of the CEP is simple:

Guelph will create a healthy, reliable and sustainable energy future by continually increasing the effectiveness of how we use and manage our energy and water resources

This vision is supported by five goals that focus on the CEP's role in attracting quality investment, in ensuring reliable and affordable energy, in reducing environmental impacts, in enhancing Guelph's competitiveness, and in aligning public investment with the CEP. Each has recommended long-term measurements detailed in the plan.

- *Guelph will be the place to invest, supported by its commitment to a sustainable energy future*
- *Guelph will have a variety of reliable, competitive energy, water, and transport services available to all*
- *Guelph energy use per capita and resulting greenhouse gas emissions will be less than the current global average*
- *Guelph will use less energy and water per capita than comparable Canadian cities*
- *All publicly funded investments will visibly contribute to meeting the other four CEP goals*

Successful delivery of these goals brings tangible financial and other benefits to residents, local business, the city administration, developers and builders, banks and investors, and the energy suppliers.

Guelph was an early pioneer in the development of community energy solutions by being a key player in developing municipal energy distribution in Ontario 100 years ago. Taking the lead for the next 100 years is entirely consistent with this tradition. Today the city covers about 86,000 km². The population of 115,000 is estimated to grow by at least 2% per year to approximately 180,000 by 2031. Residential growth will be from a mixture of redevelopment in some older areas, and new development on greenfield sites. Industrial and commercial developments are planned in six areas around the city.

Today, Guelph uses a total of 6,030 gigawatt hours of equivalent energy (GWh_e) from fuels of all types, or 52.45 megawatt hours of equivalent energy (MWh_e) for every inhabitant of the city. If the heat wasted in the production of electricity for the city is included, the total rises to 8,475 GWh_e or 73.71 MWh_e/capita. This is the energy directly consumed in the cities buildings, vehicles, and industries, and does not include energy used in ships, airplanes, long-haul freight or other transportation. In general, the Guelph CEP focuses on the energy directly used in the city as this can be more easily influenced by community action. In 2005 a total of 19.2 million cubic meters of water was pumped and treated. Lost water totaled approximately 14 percent of all water pumped. The average daily water demand was 52,579 cubic meters.²

² http://guelph.ca/uploads/ET_Group/waterworks/Waterworks_Summary_Report_2005.pdf

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This use is comprised of 230-250 litres per equivalent population per day for household use, with the balance being used by commerce and industry.

Guelph's climate, with over 4,352 heating degree days compared to only 180 cooling degree days, puts a high demand on space heating, and the plan addresses the heating alternatives in some detail.

The CEP was developed using the following priorities:

- Maximize the energy and water efficiency for buildings, vehicles and industry
- Maximize use of heat generated in electricity generation and existing industrial processes
- Incorporate as many renewable energy sources as feasible
- Team with the existing electricity and gas networks to avoid wasteful duplication of assets

Cities that systematically implement these principles year after year typically have energy levels at least half of the current levels of Guelph, with all the associated economic and environmental benefits that this brings.

On the first priority, efficiency, detailed assessments were made of the present 33,000 homes and 1.7 million m² non-residential buildings by age and energy use. The needs for the future industrial energy use and transport fuels use were similarly assessed.

Following these priorities, the CEP recommendations are:

Use efficiency to create at minimum all the energy needed to support the growth of the residential sector

It is feasible to add about 20,000 homes with no net increase in energy needs and this is the recommended target. Ontario recently passed stringent new energy efficiency building codes that will be fully in force by 2012. The CEP is recommending that the city explore incentives and other approaches to immediately implement the full code. This alone, combined with energy efficiency requirements on major residential renovations creates all the energy needed for growth.

From 2012 onwards, the CEP is recommending a steady annual improvement in energy efficiency of about 1% per year, which by 2031, would be a level that aligns with global best practice from Scandinavia and Germany.

Use efficiency to create all the energy needed to support the growth of the commercial and institutional sectors

Similarly, all the energy needed to support the entirety of the growth of commercial and institutional buildings energy needs can be met by the same combination of immediate implementation of the new codes and efficient renovation.

Adopt an energy performance labeling scheme for buildings as a voluntary initiative for the city, teamed with Natural Resources Canada and a local mortgage bank, to act as a pilot for the whole of Canada to gain about 5% incremental delivered efficiency

The CEP is recommending that all new and existing buildings have an Energy Performance (EP) Certificate that guarantees the building's energy consumption in normal operation at the

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time the building is sold or even rented. There is no Canadian EP Certification at present. It is the subject of much discussion at a Federal level in Canada, and the recommendation is to offer Guelph as a national pilot.

The recommendation is to model around an emerging approach being discussed in Canada that is an amalgam of the Canadian Energy Guide and the European Union approach.

The experience in other jurisdictions is that this stimulates somewhat higher quality buildings and a certain amount of “efficiency competition” between developers.

Add to Guelph’s attractiveness for quality industrial investment by offering world class tailored energy services and achieve annual investment growth rates higher than the underlying population growth, with no overall increase of the primary energy needed to serve the first fifteen years of growth.

Increasingly, industrial investors are looking at energy services as a key part of their decision on where to invest. The CEP is recommending developing tailored energy services for selected industrial development areas that not only deliver gas and electricity, but also selectively deliver other energy forms such as compressed air, process steam heating and cooling, etc.

Meet Guelph’s growing transport requirements while reducing the transportation energy use by 25%, using sensitive urban design, effective alternative transport options, and encouraging vehicle efficiencies.

Transport fuels collectively represent 30% of all the energy used in Guelph, and account for a huge 45% of all the greenhouse gas emissions caused by the city. The CEP recommends a multi-pronged approach that includes various measures to encourage more efficient vehicles, urban design that reduces vehicle journeys, and focused attention on appropriate competitive mass transit.

Many of these measures were already being developed in detail in Guelph’s wider transport and urban planning. The CEP is underlining the importance of their success to meeting the overall energy and climate change goals.

Incrementally create energy distribution architecture in Guelph that will allow the majority of the city to be served with fuel choices that optimize cost, availability, and environmental impact long into the future.

Over the coming years major changes will happen in energy and environmental legislation, fuel availability, the viability of emerging alternative energy technologies and their relative costs. To be able to achieve maximum benefit from these changes, the CEP is recommending a stepwise development of district heating networks covering the higher density areas of the city to supply space heating and domestic hot water. These networks also provide an efficient and economic way to distribute heat from a variety of existing and new energy sources.

In evaluating benchmark cities such as Mannheim or Copenhagen, we find that a common feature of these very efficient and reliable energy and water systems was the existence of all energy services being supplied by a single company. This avoids the inefficient use of primary fuel, and allows a rational integration of alternative energy sources. The CEP is recommending this approach.

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Within fifteen years, at least a quarter of Guelph's total energy requirement will be competitively sourced from locally created renewable resources

The challenge around climate change will increasingly turn the focus on renewable fuels as a viable and essential way to reduce greenhouse gas emissions. Currently the economic value of greenhouse gas reductions is zero, but this is likely to change as various market mechanisms come into force.

The CEP is strongly recommending a target to install the equivalent of a "Thousand Roofs" of solar photovoltaic electricity.

The heat demand of the area makes it a natural fit for integrating bio-mass heat sources combined with district heating to provide about 10% of the base load heat needs through the winter. The local wind quality makes energy from turbines marginal under the current technology. Last but not least, the growing need to find environmentally acceptable ways to manage municipal waste merits a rigorous assessment of the waste-to-energy potential.

Target – At least 30% of Guelph's anticipated electricity requirements will be associated with Combined Heat and Power (cogeneration) by 2031.

As the city's energy evolves to include more district energy, it begins to include small and medium scale combined heat and power installations. Today Guelph's 1,627 GWh annual electricity use in reality uses 4,074 GWh_e of fuel, the difference being lost as heat, creating non-productive costs and significant greenhouse gas emissions. By implementing CHP within larger developments, much of this heat can be effectively captured and used, creating major cost and environmental benefits. The CEP recommendation is to proactively seek CHP projects with a total electric capacity in the 75 to 100 MW range with a comparable level of heat recovery.

Guelph will reduce the magnitude of the summer grid electrical peak by at least 40% by 2031 to avoid the need for investment in new electrical infrastructure to serve the growth of the city

One of the consequences of growing prosperity and the norms of new construction is the increasing use of air-conditioning, even though climatically there is relatively little need. The result is very high electrical demands for a few hours a day during the summer months. This peak drives substantial investments in underutilized generation, transmission and distribution assets by the electric utility.

The cumulative effect of many of the preceding measures including efficiency, cogeneration, heat recovery and solar PV will moderate and reduce the peak.

Guelph will systematically create an integrated energy metering, billing and management network across the entire city to allow cost-effective management of all energy forms

The energy breakthroughs foreseen by the CEP arise as a result of seamless integration of energy efficiency along electrical, gas and district heating networks, with a flexible and, over time, changing mix of renewable and non-renewable energy sources. Such an approach requires a high degree of management and data sharing across the different parts of the system to deliver maximum benefit. The recommendation is to establish a common data management and metering architecture within the city.

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Guelph will implement large area high-efficiency Scale Projects that accelerate progress towards a successful implementation of the CEP by creating early success and developing a deep pool of community expertise

All too often, CEPs fail to deliver due to a lack of sufficient scale and early success. The Consortium was committed to make sure that did not happen in Guelph. As a result, the CEP is recommending implementing neighborhood energy plans in relatively large, but bounded areas of the city.

The plan is calling for the early identification and implementation of Scale Projects. Some specific ideas are included as part of the CEP, and include various business and industrial areas, the greenfield mixed use developments targeted for the south of the city, the University of Guelph Campus as a whole, and the revitalization of the St. Patrick's Ward. These are offered as viable examples of potential Scale Projects.

The CEP also recommends elements that will ensure long-term successful implementation. Many Federal, Provincial and local programs exist and the CEP is recommending the city maintain information and offer assistance to capture as many of these resources as possible. The Consortium clearly recognizes that some of the measures proposed will require adjustment or interpretation of regulatory or other legal constraints, and is committed to clear these kinds of market barriers wherever possible. Since many of these challenges will be of interest beyond Guelph, the CEP is suggesting that Guelph can be a national prototype as these market and regulatory structures emerge. A high priority in this area will be to establish the market framework of a municipal energy service organization that is structured to ensure the highest reliability, least cost and least environmental impact energy services of all types.

Guelph's elected officials, business community, financial institutions, neighborhood groups, utilities, architects, developers, construction industry, academia and the city administration are clearly committed to the vision, goals, recommended actions and progress of the CEP as a key measure of Guelph's overall success in becoming a world class city in which to live, work and play.

In support of this, the CEP is recommending community and neighborhood groups be instrumental in ensuring Scale Projects are sensitively implemented and the energy and environmental goals are fully achieved. The CEP also presents an amazing opportunity for the University of Guelph and other colleges to build on the city's commitment to the CEP by developing specialist areas of study, training and research such that Guelph will become a center of excellence on the theory and practice of sustainable urban development.

The goals that the CEP has established are intentionally very aggressive and are generational in nature. The CEP is strongly recommending the city put in place a regular reporting system to track the progress towards the goals and to share best practices with the community, both through conventional and electronic media, and as a regular topic at City Council Meetings.

Guelph is already blessed with a number of commercial, non-profit and general interest groups as well as individuals working towards sustainability, energy efficiency and alternative energy in some way. The CEP made a first step to create an inventory of some of these resources, and this should be the basis of a developing resource database.

Despite the anticipated growth of the population and increase in economic activity, the overall fuel use required by the city to deliver all its energy service will actually decrease from today's total of 8,475 GWh_e to 6,135 GWh_e in 2031. This represents a decrease of greenhouse gas

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emissions, currently at an estimated 16 tonnes per inhabitant, to about 7 tonnes. This is still some distance from the ambitious goal, but at a level that is clearly putting Guelph among the top energy performers in the world.

At the same time, Guelph will take its place as one of the most competitive and attractive cities in Ontario and Canada, with a core energy productivity expertise that will be sought out around the world.

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3. ENERGY CHALLENGES OF THE 21ST CENTURY

3.1. Global Overview

The ready availability of reliable, clean, low cost energy has allowed the industrialized countries of the world, including Canada, to achieve unprecedented levels of prosperity and well-being. Energy systems have been the catalyst that has allowed our cities to develop to be stimulating and productive places to live.

	Urban Population as a % of total population			Urban Population annual growth rate (%)	
	1970	1995	2015	1970-1995	1995-2015
Least Developed	12.7	22.9	34.9	5.1	4.6
All Developing	24.7	37.4	49.3	3.8	2.9
Industrialized	67.1	73.7	78.7	1.1	0.6
Low HDI	18.2	27.4	38.9	4.1	3.7
Medium HDI	23.0	37.7	52.7	3.9	2.8
High HDI	52.8	70.9	78.5	3.3	1.7

Source: UNDP Human Development Report 2000

Figure 3.1 Evolution of City Populations

Today, more than half of the world's population lives in cities. In the industrialized world, eight out of every ten people are city dwellers. As the 20th Century closed, all the comfortable assumptions around the cost, availability and impact of energy use were being challenged. The brunt of meeting those challenges will fall on the city leaders of the world.

There have been recent dramatic increases in the costs of coal, natural gas, and oil, accompanied by high levels of price volatility. In the past, such increases were usually followed by relatively fast declines. It is unlikely this will happen this time around. Cities, consumers and businesses would be wise to plan for steadily increasing primary energy prices.

As industrialization spreads around the world, countries like China and India are becoming major energy users, absorbing the fuel reserves that previously moderated global prices.

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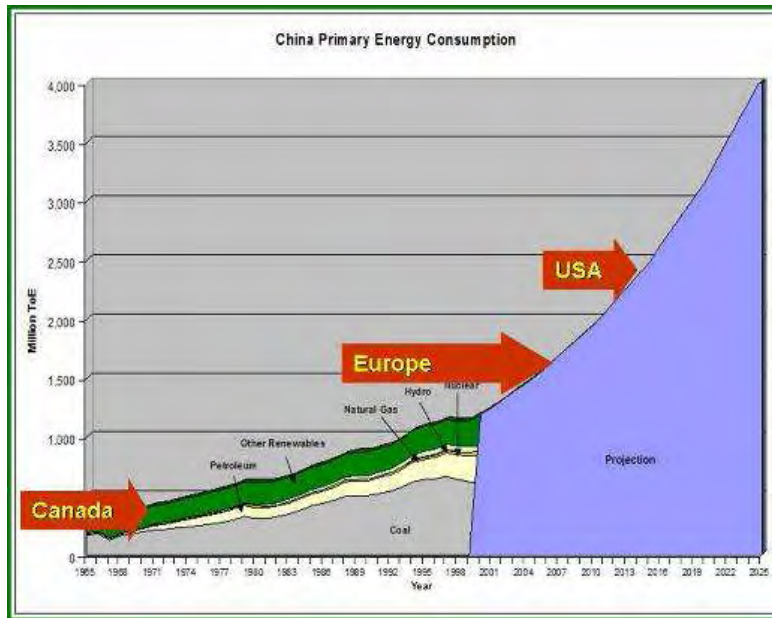


Figure 3.2 China's Energy Demand Forecast³

(See Appendix 8 for Full Size)

By 2020, China alone will be using more energy than the USA, with India's needs rising almost as fast. Even with these recent increases, Chinese and Indian energy use per head is still less than 10% of Canadian levels, showing the likelihood for sustained increases in demand.

Prices are also driven by the increasing cost of exploration, extraction and distribution of primary fuels and electricity. There is debate about how many decades or centuries of oil, gas and coal supplies are available. The consensus is for the global oil reserves to peak in the next two to four decades; that coal will be available for some centuries; and natural gas may peak within the current century. Fuel availability is only one aspect; the cost of getting it to the final consumer has dramatically increased in the past twenty years, a trend that is likely to continue.

On the environmental front, the human use of energy has caused dramatic increases in the levels of greenhouse gases in the atmosphere over the last century, a trend that is accelerating. Today, the level of the most common greenhouse gas, carbon dioxide, is already double the pre-industrial levels and is expected to double again within the current century unless significant measures are taken. At least 90% of manmade greenhouse gases come from the use of coal, oil and natural gas.

3 Sources – BP Statistical Review of World Energy June 2004 / US Dept of Energy International Energy Outlook 2004 / Projection based on IMF GDP Growth Rate forecast of 5% pa

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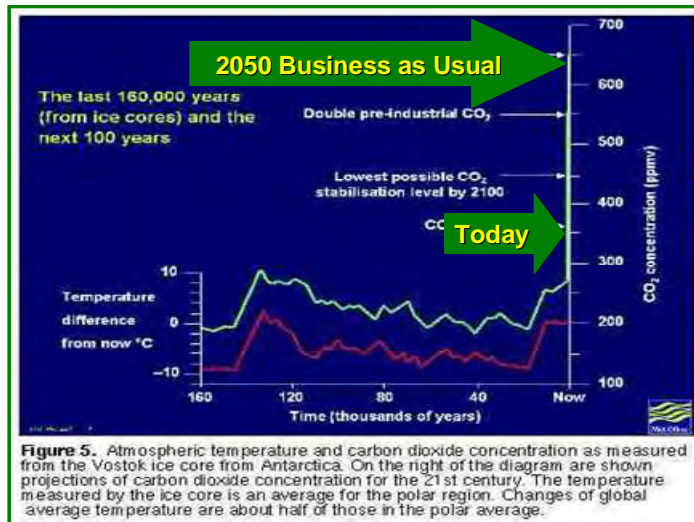


Figure 3.3 Greenhouse Gas and Surface Temperature⁴

(See Appendix 8 for Full Size)

Figure 3.3 shows greenhouse gas concentration over the last 160,000 years, the current levels and the anticipated levels that could be reached by about 2050. Historically there has been a close relationship with surface temperature and carbon-dioxide concentration. The consensus of climate scientists is that atmospheric warming is accelerating, giving raise to significant climate change.

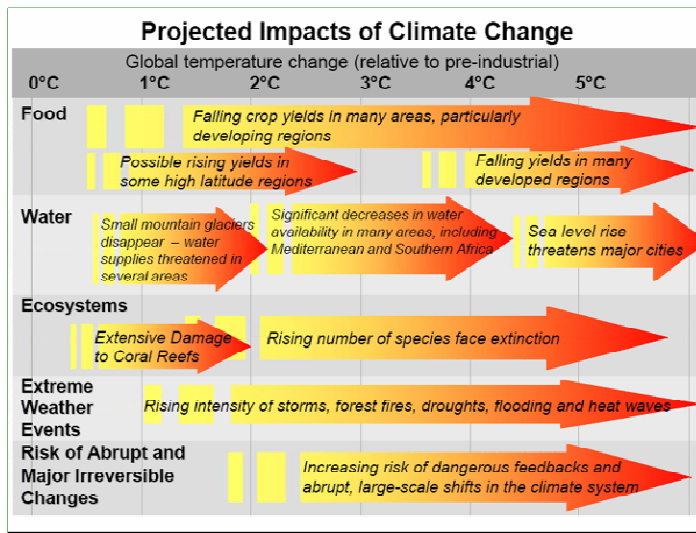


Figure 3.4 Impacts of Global Warming⁵

(See Appendix 8 for Full Size)

⁴ John Houghton-UK Met Office / Stern Review

⁵ Stern Review 2006

http://www.treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

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Figure 3.4 summarizes the impacts of global warming, including the disappearance of glaciers and ice fields, rising sea levels threatening coastal regions, an increase in the frequency and intensity of weather events and significant impacts on agriculture and species. This growing awareness of climate risk is changing legislation and management of energy around the world, a trend that is likely to accelerate.

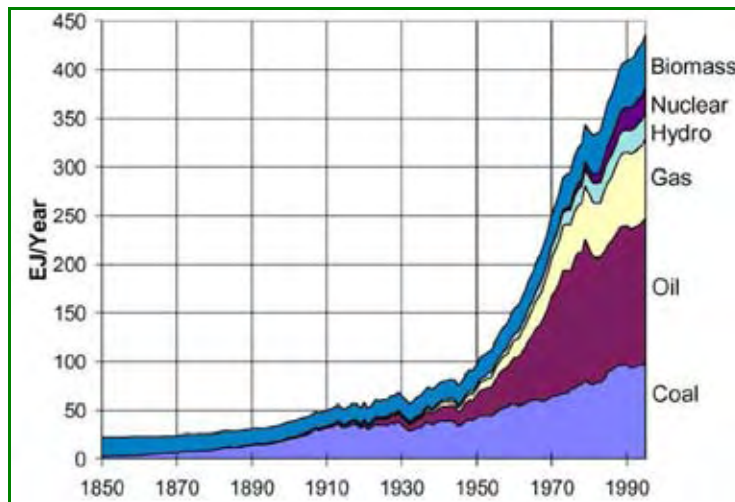


Figure 3.5 Global Evolution of Fuel Use

Figure 3.5 shows the energy use over the last 150 years, and graphically illustrates the challenge the world is facing to continue to meet the growing demand for energy services. Taken globally, we are facing a future with rising energy costs with rapidly accelerating pressure on supplies and distribution channels. There will be growing pressure from cost, legislation and environmental degradation to radically improve energy efficiency and to seek renewable, zero-carbon fuels and technologies that can reduce the climate impacts.

Closely related to energy is the challenge to ensure a low-cost, clean supply of water that will need to be addressed at many levels.

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3.2. National Energy Overview

Canada is a country blessed with large quantities of natural energy resources from coal, oil, uranium, and natural gas. In the past, this has buffered Canada from the worst of the occasional price shocks. This is becoming less true as globalization of energy markets accelerates and global demand rises. The days when Canadians could look forward to low energy prices as a certainty are numbered.

Canada's size and climate, combined with very low historic energy prices, has resulted in one of the highest per capita energy uses in the world (see box). Every Canadian uses 6.4 times as much energy compared to the global average, a quarter more than the USA, and well over twice that of the European Union.

In comparison with Sweden, a country with not dissimilar challenges of climate, size, lifestyle and economic mix, the average Canadian is consuming 80% more energy per capita than the average Swede.

The challenges of meeting China and India's growing demand for energy is radically highlighted by the twenty-to-one ratio in energy use per head.

Aside from the obvious environmental challenges raised, these large differences in energy use have a major impact on the economic competitiveness of Canada. Canada needs over 130% more energy to produce a dollar of economic output compared to Germany. As energy prices globalize, this discrepancy has significant and growing impacts on the competitiveness of the national economy.

The overall growth of the Canadian population and the economy is also putting strains on the existing energy supply systems, especially around electricity, a further factor that will require the country to rethink its energy use patterns.

Canada is experiencing some of the clear early warning signs of climate change, with accelerated melting of glaciers and ice fields. The national debate around the appropriate way to tackle climate change is very energetic at the moment, including whether to stay committed to the obligations of the Kyoto Treaty that call for Canada to reduce greenhouse gas levels by 6% relative to 1990 levels by 2012 to a level of about 563 Million Metric Tons (tonnes) of carbon dioxide equivalent. This target is far from being achieved at present with Gross 2004 emissions at about 758 Million tonnes, or 27% above 1990 levels. On a per capita basis, Canadians emit 23.7 tonnes of greenhouse gases compared to 23.9 Tonnes in the USA, and 9.3 tonnes in the European Union. The Swedish emissions are 7.8 tonnes/capita.⁶

The current forecast from the Canadian Government is for a steady increase in greenhouse gas emissions rising to 897 Million tonnes of CO2 equivalent, and increase of more than 50% above

Country	Energy Index
Total World	1.0
Canada	6.4
USA	5.1
EU 25	2.6
Sweden	3.5
Germany	2.6
China	0.5
India	0.2

The relative average per capita energy use of some selected regions around the world. This shows the energy use of each region's inhabitants relative to the energy used on average by all the world's inhabitants.¹

⁶ Kyoto Treaty Text and greenhouse gas data from UNFCCC website - <http://unfccc.int/2860.php> and Environment Canada http://www.ec.gc.ca/pdb/ghg/inventory_report/2004_report/ts_1_e.cfm

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the Kyoto Treaty 1990 reference year. Carbon dioxide emissions directly attributable to domestic energy use in Canada in 2004 are at a level of 18.4 tonnes/capita and this level will be used through the rest of the document.

As the most populous province, Ontario is a major source of greenhouse gases. Figure 3.6 summarizes Canada's total greenhouse gas emissions by province.

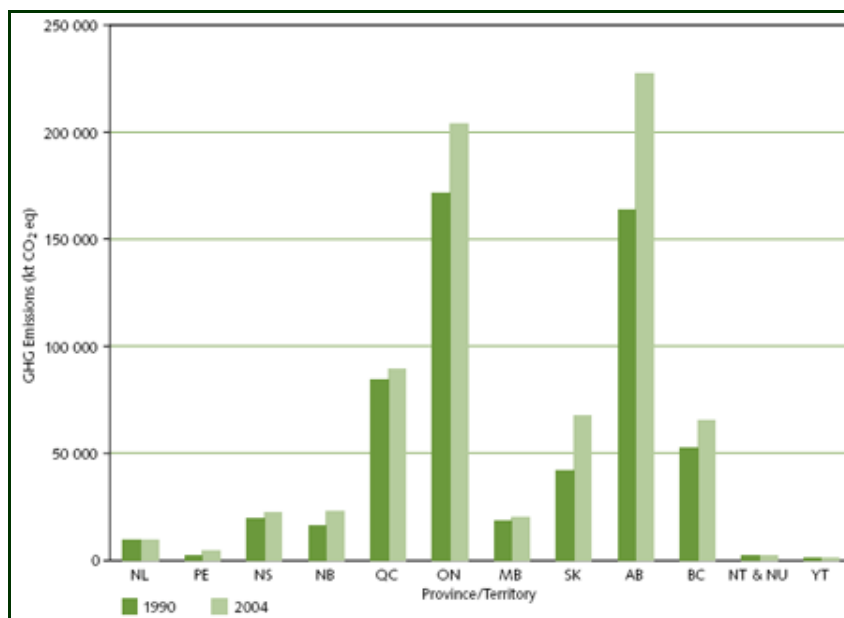


Figure 3.6 Greenhouse Gas Emissions by Province

At 16.4 tonnes/capita, Ontario is somewhat less than the national average, primarily due to the generating and industrial mix. However, this is still about twice the Swedish level and some 75% higher than the EU average.

In terms of water use, Canada uses 1.6 cubic meters of water per year per person; three times as much as the average German, four times as much as the average Swede, and eight times as much as the average Dane. Only the USA has a higher per capita water use than Canada. An often overlooked fact is the amount of energy that is used to prepare and process water.

The National Energy Board has launched a consultative process to develop an "Energy Futures Report" that will be available at the end of 2007⁷.

Whatever the details, the future directions are clear. To compete on a global scale, the Canadian economy must become substantially more energy and water efficient. Reducing the climate change impacts of energy use will feature strongly in the national scheme of things moving forward.

3.3. City Level Challenges

With 80% of the industrialized world's citizens already living in cities, and the major growth in the rest of the world being in the urban environment, it is the cities that must lead the efforts

⁷ http://www.neb-one.gc.ca/energy/EnergyFutures/2006/index_e.htm#introduction

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around ensuring clean, reliable, safe and economic supplies of energy and water in the face of the growing challenges.

Homes and buildings are responsible for over 30% of all energy used in Canada, and proportionally more of all the energy used in most cities. They also account for over 55% of all electricity used. Personal transport accounts for a further 16% of all energy used in the country, most incurred in the urban environment. Freight transport represents 12% of Canada's energy use, much of it within cities, or associated with delivering the goods and services that allow the city to function. Collectively, cities are the major users of energy. Industry uses a further 38% of all energy. With Canada's high levels of activity in mining, metals, pulp and paper, forestry and similar industries, most of the industrial use is outside of most major cities.

The low cost of energy in both Canada and the USA has encouraged the development of cities that are very different from city structures of the past. They cover very large areas with low population density. Cities are zoned with distinctive areas for homes, commercial offices, industrial areas, shopping and entertainment. This layout and density encourages widespread use of cars and discourages the use of cost-effective public transport. The widespread use of cars necessitates wide drivable roads and parking, further reducing the density. Similar patterns have emerged in some of the urban development in Asia, and even in some suburban development in Europe. This approach to urban development is very energy intensive, especially considering that the USA and Canada have had some of the lowest energy efficiency in buildings in the industrialized world, and the rising energy prices and volatility. It is easy to see why achieving significant breakthroughs in energy use in North American cities is becoming a high priority to city leadership.

3.4. Supplemental Reading on Sustainable City Experiences

For the reader interested in further background as to how different cities are responding to creating cleaner, more energy efficient cities, the following examples provide a wealth of ideas and approaches. This is a limited list and interested parties can find more examples by doing a search on the web or at the local library on the subject.

United Cities and Local Governments

This is a global organization that shares broad items of interest to cities around the world <http://www.cities-localgovernments.org/uclg/index.asp>

Energie Cites

A European organization focused on promoting sustainable energy approaches. Now it has a widening membership beyond Europe. <http://www.energie-cites.org/>

Natural Resources Canada

This Federal agency has some excellent material on managing energy in the community http://www.sbc.nrcan.gc.ca/communities/communities_e.asp

Sustainable Communities

This USA based organization has a broad range of material and links to a variety of city initiatives in the USA and elsewhere. <http://www.sustainable.org/>

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Mayors' Asia-Pacific Environmental Summit

This is an annual conference organized by mayors around the pacific rim to discuss urban environmental and sustainability challenges

<http://www.environmentalsummit.com/>

An underlying theme of all these cities' goals is the vital contribution that sustainable, clean and economic energy and water services add to the overall attractiveness and competitiveness of the city. The reverse is clearly true; expensive, unreliable and polluting energy and water systems will ultimately become a deterrent to investors, inhabitants and tourists.

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4. GUELPH'S CHALLENGES

4.1. Managing Growth Pressure

Guelph is a compact city with a 2005 population of about 115,000, plus an additional 18,000 students residents during the academic year⁸, located about 100 km from Toronto's Central Business District. It covers an area of about 86 square kilometers. It is located in one of the strongest economic growth regions in Canada, and North America.

In addition to its proximity to Toronto, Guelph has many aspects making it an attractive place for potential investors and residents. It is home to the University of Guelph, and a wide range of manufacturing, high tech and service industries. It is well located for transportation, is an agricultural hub, and is in the "Golden Triangle" which is attractive to many incoming investors.

Combined, these characteristics are putting significant growth pressure on Guelph.

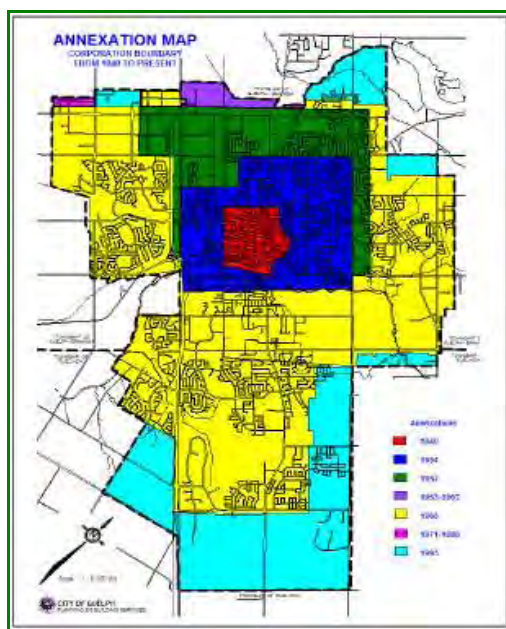


Figure 4.1 Guelph Growth 1940 to Present Boundary

Guelph has already experienced significant growth over the last 50 years to its current boundaries. The population is expected to further increase to around 180,000 by 2031 along with significant industrial and commercial investments.

⁸ For per capita indexing the student population has not been included.

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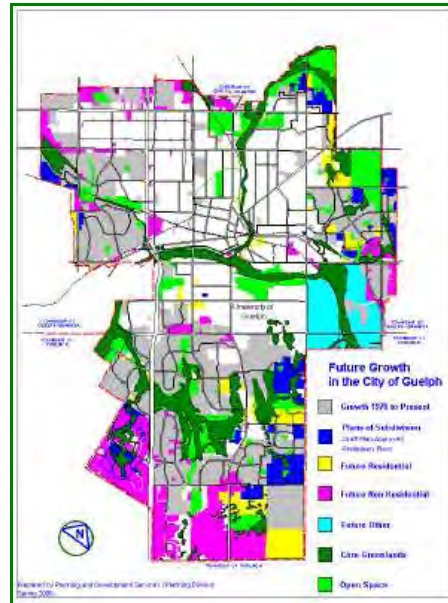


Figure 4.2 Designated Growth Areas

Future growth is expected to occur within the existing boundaries, following the basic principles of “Smart Growth” and provincial “Places to Grow” legislation. These include selective intensification, increasing the efficiency of infrastructure, and ensuring valuable heritage features, public spaces and significant natural features are retained.

4.2. Long-term Competitiveness

Guelph is committed to economic development and growth that will ensure the long-term competitiveness of the city as a safe place to invest, work, and live. This has multiple dimensions including attracting high-quality long term employment opportunities, offering a full range of world-class education, a range of housing for all income levels, supported by public services of the highest quality at competitive costs. Among these must be reliable, clean and economic energy and water services, the area specifically addressed by this Community Energy Plan.

4.3. Quality of Life

Guelph is committing itself to being a role model for Canada and the world in offering a distinctive quality of life at many levels through active involvement of all sections of the community, including the city administration and political leadership. This will include ensuring that Guelph remains a center of excellence for scientific and technical innovation through its university, commerce and industries. The city will retain its distinctive character built on over 175 years of history, including maintaining a conscious connection with the agricultural community. It will actively capitalize on the benefits offered by the ethnic and cultural diversity within the city. The city will be recognized as a center for arts and culture of all genres. Last, but certainly not least, Guelph is committed to being a community where the highest levels of sound environmental stewardship guide all of its decisions.

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4.4. Community Response to the Energy Challenge of Growth

The combination of managing growth and adhering to sound environmental principles is particularly challenging when it comes to providing energy and water services of the highest quality, lowest cost and with the least environmental impact. This was recognized by a number of leaders in Guelph who started addressing this issue as early as 2003, and then in the fall of 2005 formally founded a Community Energy Plan Consortium with the aim of leading the city and its constituents to a more sustainable energy future. By late 2005, the Consortium had carried out a number of public input meetings and workshops. In mid 2006, the Consortium reinforced its efforts to develop a Community Energy Plan for the city by awarding a contract to Garforth International llc.

Since that time, the roster of organizations represented by the Consortium has grown and now includes:

- Guelph Hydro (co-chair)
- City of Guelph – Department of Environmental Services (co-chair)
- Union Gas
- City of Guelph – Department of Planning
- City of Guelph – Community Services Department
- Guelph Chamber of Commerce
- Upper Grand District School Board
- Wellington Catholic District School Board
- University of Guelph
- Friends of Guelph
- Charles Simon – Architecture Planning Research
- Guelph Developers' Association

The consulting team includes members with expertise in building efficiency, renewable energy, integrated municipal energy and water systems, and overall strategic energy management. The team was chosen in part because it included members with clear experience that included European municipal energy and water practice from Mannheim, Germany⁹, a city widely recognized as a benchmark in terms of providing low impact, high quality services.

As a major part of the process, a number of public meetings were held to provide information and gain input. The input process culminated with the public forum held in the River Run Center, with over 100 participants. In all, an estimated five hundred people have participated in these meetings and have made their interests, visions and concerns known. They have thus been a part of the creation of the CEP Preliminary Draft recommendations. (See Figure 4.3)

⁹ See Section 11 – Scale Projects and www.mannheim.de.

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Workshops/Presentations/Milestones	Date
<i>Initial Community Workshops (5 sessions)</i>	<i>Dec 5&6, 2005</i>
<i>RFP awarded</i>	<i>06-Jun</i>
<i>Kick-off Meetings – Consortium, UoG, City, School Boards, GHI</i>	<i>Jun 6 to 9</i>
<i>Community Presentation # 1 – GDA Focus Group</i>	<i>22-Jun</i>
<i>Community Presentation # 2 – Industrial Focus Group</i>	<i>05-Jul</i>
<i>Consortium review of CEP work in progress</i>	<i>23-Aug</i>
<i>Community Presentation # 3 – City Council + Guelph Hydro</i>	<i>06-Sep</i>
<i>Community Presentation # 4&5 – Students / Energy and Environmental</i>	<i>10-Oct</i>
<i>Community Presentation # 6 – University of Guelph</i>	<i>15-Nov</i>
<i>Community Presentation # 7 - Small and medium Enterprise / Public Sessions</i>	<i>14-Nov</i>
<i>Community Presentation # 8 – Public Forum</i>	<i>15-Nov</i>
<i>Draft CEP</i>	<i>08-Jan</i>
<i>Consortium Review of Recommended CEP</i>	<i>12-Jan</i>
<i>Formal presentation to City Council (date to be aligned with council agenda)</i>	<i>TBD</i>

Figure 4.3 Timetable - Workshops/Presentations/Milestones

Throughout the process the Consortium met at least once a month to review and guide the progress.

The last step of this phase of the process is to finalize the Community Energy Plan Preliminary Draft Report with the Consortium and present it to the City Council for receipt prior to communicating the CEP to the wider community. Clearly the CEP must be seen in the context of any legal and formal regulatory framework.

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5. VISION OF A SUSTAINABLE ENERGY FUTURE

5.1. Community Energy Plan Vision

Energy Vision for Guelph

Guelph will create a healthy, reliable and sustainable energy future by continually increasing the effectiveness of how we use and manage our energy and water resources.

Throughout the development of the Community Energy Plan, the Consortium took a global perspective to benchmark their decisions from around the world. The decision on the choice of overall Vision was no exception. Energy and sustainability visions from the UK, Sweden, and Canada¹⁰ were discussed and elements incorporated into the final selected Vision.

The Consortium recognized the importance of a Vision around energy and water that would not be changed year to year, but would survive in intent, spirit and wording literally from one generation to the next.

5.2. Sustainable Energy Goals

Goals in Support of Guelph's Energy Vision

- 1. Guelph will be the place to live and invest supported by its commitment to a sustainable energy future***
- 2. Guelph will have a variety of reliable, competitive energy, water, and transport services available to all***
- 3. Guelph energy use per capita and resulting greenhouse gas emissions will be less than the current global average***
- 4. Guelph will use less energy and water per capita than comparable Canadian cities***
- 5. All publicly funded investments will visibly contribute to meeting the four CEP goals***

The Consortium was very clear in the intent to create a plan that was not only visionary, but was also firmly rooted in the need to be actionable, with goals that were clearly, and easily measurable. Goals were selected bearing in mind that they meet the following criteria:

- They clearly support the economic, social and environmental benefits of the Community Energy Plan
- They are structured such that they can survive unchanged for years or decades
- They highlight clear benefits for residents and investors in the city
- They must be easy to explain, understand and measure

These goals and the associated detailed measurements are covered in more detail in Section 9 of the CEP. In general, if there was conflict between being precise, but difficult to measure or

¹⁰ Among others – London, UK; Växjö Sweden; Mannheim, Germany; Yellowknife, Canada; Berlin, Germany, Copenhagen, Denmark.

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communicate, or being directionally correct and easy to measure and communicate, the Consortium elected to go with the latter position.

5.3. Benefits for the City of Guelph

As Guelph delivers on its energy plan, a wide range of benefits will accrue to various communities within the city. These are wide-ranging and interconnected. All contribute to the long term health and prosperity of Guelph.

5.3.1. Benefits for the Residents

- Domestic energy and water costs will be consistently lower than neighboring cities
- Air quality, in relation to lowered greenhouse gas emissions, will be substantially better than in a business-as-usual approach
- Supply reliability will be less vulnerable to disturbances in specific fuel supply chains
- Residents will be less vulnerable to abrupt pricing changes caused by market volatility
- The satisfaction in knowing these benefits are achieved with significantly reduced impact on the planet

5.3.2. Benefits for Guelph's Businesses

- All of the same benefits as for the resident
- Opportunity to receive energy services tailored more closely to the specific needs of the business
- By reducing greenhouse gas, the risks of possible future costs around climate change regulation are reduced
- Availability of talented labor attracted by Guelph's commitment to a sustainable future
- Opportunity to create products, services and solutions aimed at supporting Guelph's implementation of the CEP – and the opportunity to market these beyond Guelph

5.3.3. Benefits for the City Administration

- As an operator of the city facilities, all of the same benefits as for business
- Enhanced tax base from quality commercial and industrial investors and their employees
- Opportunity to attract investment clusters around products, services and solutions aimed at serving sustainable community energy and water plans
- Reduced risk of becoming "just one more Toronto dormitory"

5.3.4. Benefits for Financial Institutions

- Enhanced collateral value of residential and commercial property due to reduced energy and water operating cost allowing extended mortgages or financing
- Reduced financing risk of residential and commercial property due to reduced exposure to energy and water market volatility.

5.3.5. Benefits for Developers and Builders

- Ability to capture premium market prices as a result of enhanced collateral value of efficient property

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- Development of community based district energy services may reduce construction costs of individual homes and buildings¹¹

5.3.6. Benefits for Canada and the Planet

- Being a leading example that Canada has the potential and commitment to create innovative community responses to the global challenges of energy and water
- Creating a replicable model that can be proliferated across Ontario and the nation
- Being a tangible example of how Canada can reverse its deteriorating performance¹² in meeting its global environmental commitments

5.3.7. Benefits for Energy Service Suppliers

An integrated community energy approach creates new opportunities and benefits for energy service suppliers to both the city and the surrounding region. An, almost inevitable, fallout of the successful implementation of a Community Energy Plan is some degree of reshaping the commercial frameworks that provide energy supply services and energy efficiency services to the city. The precise form of these changes will evolve over time, and it is premature to jump to final conclusions at this stage of the development of the Community Energy Plan. Whatever the form, the benefits that the CEP creates for future energy service providers will include some combination of the following:

- Improved return on generating and distribution assets due to increased range of energy services and improved primary fuel efficiency
- New market opportunities through the sale of energy efficiency management services and equipment
- Greater understanding of end-customer energy needs
- Managing future risk of cost or regulatory impacts resulting from greenhouse gas reduction policies
- Developing integrated municipal energy services management expertise that itself becomes a marketable product

¹¹ See CEP Section 10 – Strategy on District Energy & Section 11 – Scale Projects

¹² See “Canada vs. The OECD: An Environmental Comparison” – University of Victoria – 2001 as an example of an assessment of Canada’s global environmental ranking

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6. PROFILE OF GUELPH

6.1. General Background

Guelph is a unique Ontario community in Wellington County. It is known for historical architecture, a wonderful mix of urban amenities and dedication to the arts. It is in one of the fastest growing regions of Ontario, commonly known as the ‘Greater Golden Horseshoe’. This growth is both an opportunity and a potential threat to Guelph in the 21st Century.

Guelph is a city with a clear community commitment to economic development and sustainability which can sometimes be seen as being in conflict with each other. The Community Energy Plan is a significant opportunity to add support to an ongoing “philosophy that seeks to balance economic, social and environmental perspectives”¹³.

This community has continually shown its receptiveness to innovation from its founding in 1827. John Galt of the Canada Company created a bold vision and a plan for Guelph. To quote a local historian: “So spectacular was the result, that, for a time, [Guelph] rivaled Niagara Falls as a tourist destination, and both wealthy travelers and government officials came to view the fruits of Galt’s grand design.”¹⁴ The City has continued to thrive through most of its history.

6.2. Historical Role in Community Energy

It is appropriate that Guelph is taking a lead in developing a Community Energy Plan for the next 100 years, having been a key player in the development of communal energy distribution in Southern Ontario. In 1903, Guelph was one of the first Ontario municipalities to take over the privately owned local gas and electricity provider. It was the first municipality in Ontario to own its utility debt-free.

The leadership of the city was also instrumental in creating the Hydro Electric Power Commission of Ontario bringing hydro-electricity from Niagara Falls in 1906.

6.3. Present Day Profile

The city covers 85.89 km² within Wellington County¹⁵, approximately 100 km west of Toronto, surrounded by fertile agricultural lands including many organic farms. This close connection to agriculture is reflected in existence of both the Ontario Agricultural College and the Ontario Veterinary College, on the campus of the University of Guelph. Guelph is also home to the Ontario Ministry of Agriculture, Food and Rural Affairs.

Guelph is in the “Greater Golden Horseshoe”, a technology and growth hot spot. This region is targeted by the Ontario Government’s “Places to Grow Act” as a high growth area. The median

¹³ City of Guelph, <http://guelph.ca/documen.cfm?noheader=1&smocid>

¹⁴ History of Guelph, Johnson, 1977

¹⁵ 2001 Community Profiles,

<http://www12.statcan.ca/english/profil01/CP01/Details/Page.cfm?Lang=E&Geo1=CSD&Code1=3523008&Geo2=P&R&Code2=35&Data=Count&SearchText=Guelph&SearchType=Begins&SearchPR=35&B1=All&Custom=>

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age of the population is 35.4 with 80% of the population above 15 years old, mostly between the ages of 25 – 54¹⁶.

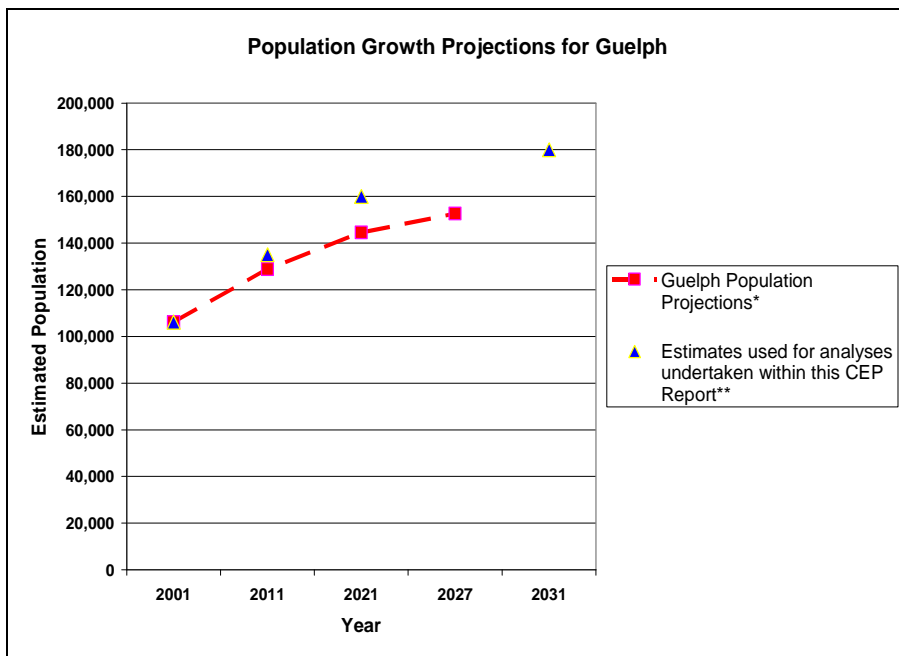


Figure 6.1 Population Growth Projections for Guelph

The population has grown by 10.8% between 1996 and 2001, faster than the Ontario average of 6.1%. In 2006, the growth rate was 2.3%.¹⁷ **Estimates based on achieving Places to Grow goals of approximately 180,000 in population by 2031.

For this report, the 2005 population is estimated at 115,000, with 2031 predicted to be 180,000, representing a 2% growth per year. Some estimates are anticipating a higher rate of growth.

Population density was 1,250 inhabitants per square kilometer in 2001.

Population statistics for Guelph, including overall population estimates, are understood to exclude the approximate 16,000 students (2005) studying at the University of Guelph.¹⁸ A large proportion of these students, perhaps 90%, leave Guelph over the summer period from May to September, the time when census data is generally collected.

¹⁶2001 Community Profiles,

<http://www12.statcan.ca/english/profil01/CP01/Details/Page.cfm?Lang=E&Geo1=CSD&Code1=3523008&Geo2=P&Code2=35&Data=Count&SearchText=Guelph&SearchType=Begins&SearchPR=35&B1=All&Custom=>

¹⁷ City of Guelph, Growth Management Workshop, May 2006

¹⁸ Gillian Maurice, Sustainability Coordinator, Physical Resources, University of Guelph

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The following statistics are based, unless otherwise specified, on the 2001 census data¹⁹ as per below:

- Population density was 12.25/km².
- Most of the population uses their private cars for transportation, making this a major component of overall energy use:
 - About 7% of the Guelph population shares passenger transport to work.
 - About 15% of the population uses public transport, bicycle or walks to work.
- The student population is a heavy user of public transport compared to the average Guelph citizen. Student use of public transport is encouraged through the inclusion of reduced fare bus pass fee as part of their overall student fees.¹⁷
- The average income for Guelph is in line with provincial levels:
 - Median household income was \$56,000 in 2001, slightly higher than the Ontario average.
 - Median household income has risen to \$74,600 in 2006.

In summary, Guelph is a diverse, medium-sized community reflective of the overall profile of Ontario.

6.4. Economic Development

One of Guelph's greatest assets is a capable, productive, and well educated workforce. It is situated in one of the fastest growing economic regions of North America and is close to major markets. Guelph is well served by most means of industrial and commercial transport including rail. These items help to make Guelph attractive to investors, as well as making it an attractive place to live, work and play. There is a large availability of public and private sector industrial and commercial lands²⁰ including:

- Hanlon Business Park – City Owned
- Hanlon Creek Business Park – Private/Public Partnership
- Northwest Industrial Area – Mature Area
- Southern Industrial Area – New Development
- University of Guelph's Research Park – Start-up Innovation Incubation
- York Road Industrial Lands – Emerging New Development Area

Commercial and retail opportunities abound, as exemplified by recent expansion of the Stone Road Mall, and the growing retail development to the south. The availability of reliable and competitive energy services is a key factor for industrial and commercial investors, a key aspect addressed in the Community Energy Plan.

Altogether there are over 1000 registered businesses operating in Guelph with most employment being in manufacturing and educational services. Retail and health are closely tied

¹⁹ <http://www.statcan.ca/menu-en.htm>

²⁰ City of Guelph, Guelph Land and Building Profile, 2004

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for third and fourth in terms employment. In 2001, approximately 61,280²¹ jobs existed, a number expected to grow to 98,000 by 2031.

6.5. Crossroads in Development

The citizens of Guelph were consulted in mid-2006 regarding their opinions concerning growth. While being generally supportive, concerns were voiced on managing the impacts of growth. Although the general outlook is positive, it is important to the citizens that the essential and individual character of the city be maintained. As discussed later in this report, the Community Energy Plan brings major contributions to achieving this goal.

Guelph is at a crucial development stage, with the population is expected to increase by as much as 60% within the next two to three decades. This has triggered in-depth reviews of many aspects of municipal operations:

6.5.1. “SmartGuelph Principles”

Laid out in 2003, these principles²² serve as a framework for strategic planning. Guelph is targeted to grow, preferably without annexation, within the Province of Ontario’s thirty year “Places to Grow”²³ legislation. A Local Growth Management Strategy²⁴ is exploring options for growth. There will be significant residential and commercial densification, allowing more energy supply and efficiency options which is a crucial aspect in the Community Energy Plan.

6.5.2. Water Resources

Guelph is one of the few Ontario municipalities that obtains all of its water from groundwater sources. The city has recently completed a 50-year Water Supply Master Plan to ensure the reliable long-term supply of high quality affordable water. The Plan, as adopted by City Council considers the updating and on-going implementation of the city’s award-winning Water Conservation Plan, as well as optimization and upgrades of current groundwater sources and the potential availability of new groundwater and surface-water sources. Although the plan considered all alternatives, including a pipeline to Lake Erie, the council excluded the pipeline from approval for implementation. Energy is up to 70%²⁵ of the cost of potable water and waste water and the Community Energy Plan includes some specific recommendations on reducing overall use of potable water.

6.5.3. Transportation

The Guelph Wellington Transportation Study, based in part on the review of the household travel habits for 12 municipalities in the region and a ‘2005/2006 Tomorrow Survey’²⁶ has recently been completed and supplements the city’s Transportation Strategy framework adopted in 2001.

²¹ City of Guelph, Growth Management Workshop, May 24, 2006

²² City of Guelph, <http://guelph.ca/living.cfm?smocid=1964>

²³ Ontario Ministry of Public Infrastructure Renewal, <http://www.pir.gov.on.ca/english/growth/index.html>

²⁴ City of Guelph, <http://guelph.ca/living.cfm?smocid=2106>

²⁵ Range is 30%-70%. <http://www.ase.org>

²⁶ City of Guelph, Transportation Planning, <http://guelph.ca/living.cfm?subCatID=1514&smocid=2093>

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6.5.4. Waste Management

Managing municipal waste is a major challenge for all cities, and Guelph is no exception. The city has a source-separation program for the separate collection of both recyclable waste and compostable waste and an innovative Wet-Dry facility which includes a Material Recovery Facility (MRF) and composting facility. The composting facility is currently shutdown temporarily for repairs and upgrades, but is budgeted to be reopened in 2008. In addition, the city has initiated a master plan for solid waste which will explore all viable technical and economic options for an integrated waste management program for Guelph for the next 25 years. The Master Plan process is being supported by Green Municipal Enabling Funds (GMEF). In addition to implementing strategies to reduce the total amount of waste by recycling and composting as much as possible, the remaining combustible component is increasingly seen as a potential fuel source and as such has a place in the Community Energy Plan deliberations.

In addition, Guelph Hydro Electric Systems and the city have a landfill gas cogeneration project at the city's recently closed landfill site. The city collects landfill gas and provides it to Guelph Hydro's Ecotricity cogeneration facility located on the closed landfill. This project is supported by federal funding programs. The city is also working with Guelph Hydro to consider energy conservation options for the city's Wet-Dry facility.

6.5.5. Waste-water Management

The city is undertaking capital upgrades to an on-site cogeneration facility at the Waste-water Treatment Plant to generate electricity from biogas to offset electricity requirements of the facility. This capital project is being supported by Guelph Hydro's Conservation and Demand Management Program (CDM). The city is also working with Guelph Hydro to replace existing equipment at the Waste-water Treatment Plant with high efficiency options.

This is not a complete list of city initiatives by any means. However, it summarizes the key areas that have the potential to be a major impact on Guelph's energy use and/or energy supply, and the reader is recommended to peruse the referenced documents and web sites. These initiatives along with the Community Energy Plan, also underline Guelph's visible and growing commitment to long-term sustainability.

6.6. Overview of Built Infrastructure

The majority of energy use in any modern city is in residential homes, commercial and institutional buildings, with industrial use being a major added component. The overall inventory of Guelph's so-called "Built Infrastructure" is summarized in²⁷ Figure 6.2.

²⁷ Property data sourced from City of Guelph – Economic Development – status 2005

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Sector	Square metres (m ²)	Square feet (ft ²)	Number
Residential ²⁸	5,205,212	55,970,026	33,376
Commercial	847,627	9,103,518	3,137
Institutional	836,289	8,992,356	367
Industrial	1,707,702	18,362,384	2,321

Figure 6.2 Property Areas for Guelph by Building Sector

A base for any Community Energy Plan must include an assessment of the scale of the built infrastructure, including its use, age, efficiency, and its likely evolution going forward. These are used in the creation of energy benchmarks for the city.

The overall land use of Guelph is summarized in Figure 6.3.

Sector	km ²	% Total
Residential	33.36	35.9%
Agricultural	22.05	25.7%
Parks/Open Spaces	11.75	13.7%
Commercial	3.21	3.7%
Institutional	7.40	8.6%
Industrial	8.08	9.4%

Figure 6.3 Guelph Land Use by Sector²⁹

The Residential profile was available in some detail, and is summarized in Figure 6.4.

²⁸ The residential category – “Other” - of approximately 32,000 sq. m is not included in the total.

²⁹ City of Guelph, Growth Management Workshop, May 24, 2006

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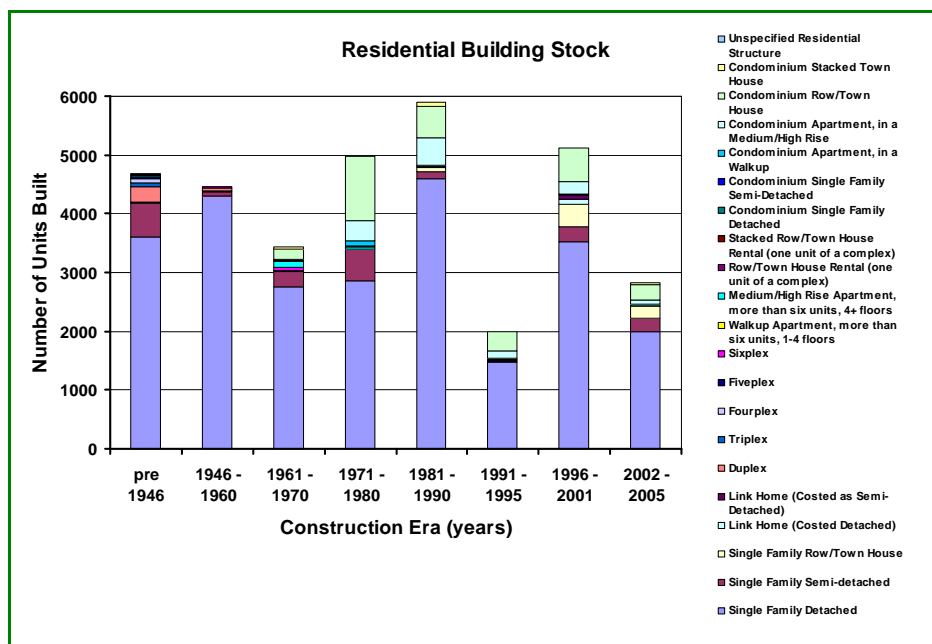


Figure 6.4 2005 Estimates of Residential Property³⁰ by Age and Building Type

(See Appendix 8 for Full Size)

Information on commercial, institutional and industrial buildings was more fragmented and there is ample scope for more systematic analysis in the future.

6.7. Climate

Clearly, climate has a huge role in the use of energy. Heating and cooling buildings of all types is one of the largest uses of energy. Climate also has major impacts on transportation energy use. Today, with wind, sunshine and biomass products increasingly seen as alternative energy supplies, the role of climate is becoming increasingly important in the total energy equation.

6.7.1. Heating & Cooling Degree Days

Heating and cooling degree days are a measure of the degree to which buildings need heating or cooling to maintain a specified level of temperature comfort.

Guelph is predominantly a heating environment, an average of 4,352 heating degree days per year.³¹ This indicates a high heating demand.

As a comparison, Mannheim in more temperate Central Germany has about 3,470 heating degree days and Cleveland, Ohio in the US about 3,900. Cooling degree days³² are about 180²⁹ referenced to an average outdoor temperature of 18 degrees C. Traditionally, cooling would have been seen as an unnecessary luxury. However, with the increased use of air conditioning throughout the affluent developed world, cooling load is becoming more significant and must be incorporated into the energy planning.

³⁰ City of Guelph Residential Property Data provided jointly by City of Guelph Economic Development and Technical Services

³¹ <http://www.on.ec.gc.ca/weather/winners/intro-e.html>

³² NRCan, RETScreen Clean Air Technologies modeling tools, <http://cetc-varennnes.nrcan.gc.ca/en/retscreen.html>

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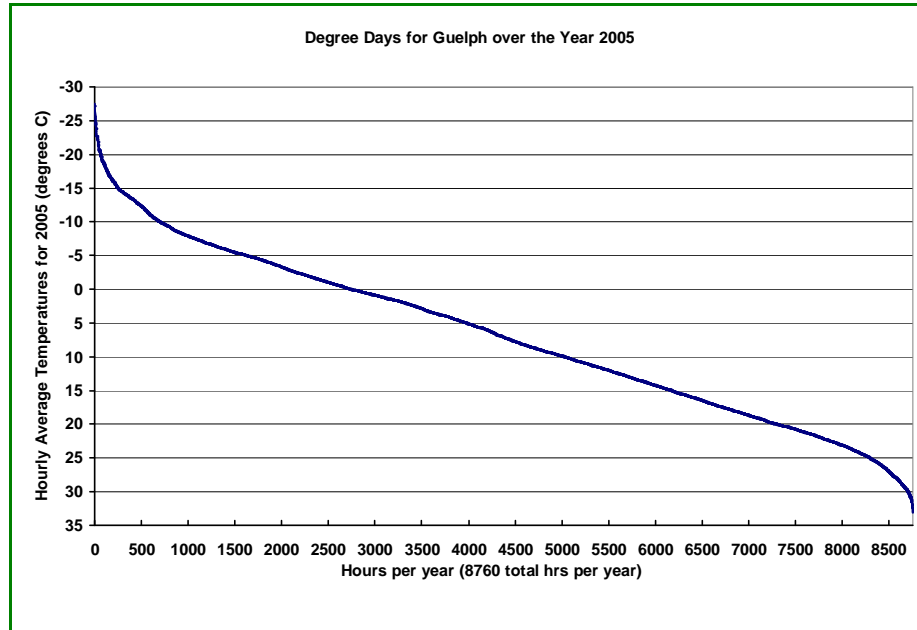


Figure 6.5 Distribution of Hourly Temperatures in Guelph

An overview of Guelph's hourly temperature levels is summarized in Figure 6.5, and is the basis for calculating heating and cooling degree days. These are two critical elements in estimating the energy needs of buildings. Other climate data including solar radiation, wind speed, and humidity were gathered³³ and used in the energy modeling. (See Figure 6.6)

	Solar Radiation (MJ/m ² /day)		Temperatures °C				Wind km/h
	Global	Diffuse	Dry Bulb	Wet Bulb	Amplitude	StdTmp	
January	5.01	3.1	-6.9	0	12.7	3.13	16.44
February	10.22	4.32	-7	0	11.7	2.8	15.21
March	13.32	6.16	-2	0.07	14.6	2	15.68
April	16.31	7.96	5.4	6.76	10.4	1.6	15.32
May	20.27	9.25	11.9	10.5	8.23	1.8	13.02
June	22.72	9.68	17.4	14	6.53	1.3	12.05
July	22.06	9.4	19.9	16	5.33	1.1	11.65
August	19.01	8.42	19	14.7	6.14	1.3	11.62
September	13.97	6.84	15.2	10.9	9.42	0.9	13.31
October	9.32	4.97	8.9	6.37	10	1.5	15.07
November	4.9	3.31	2.2	0.91	12.6	1.5	16.83
December	4.5	2.7	-4.1	0	13.9	2.8	16.94

³³ NASA surface meteorological and surface radiation data site, <http://eosweb.larc.nasa.gov/sse/>

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Figure 6.6 Other Climate Data Used for Modeling of Buildings in Guelph

6.7.2. Solar Resources

Sunshine is increasingly a “fuel” for solar electricity and solar heating. The University of Guelph manages the Elora Research Station near Guelph (43.39°N, 80.25°W) and supplied detailed hourly data of solar radiation. Figure 6.7 summarizes the solar radiation intensity for a 12 month period between 2004 and 2005.

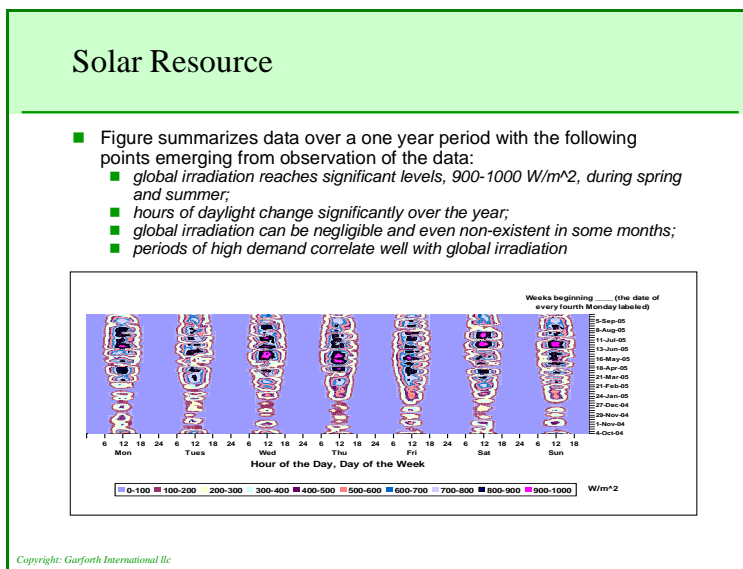


Figure 6.7 Irradiation Data in the Guelph Region (04/05)

(See Appendix 8 for Full Size)

When this data is correlated with the electricity demand and electricity pricing, the periods of maximum solar radiation align reasonable well with high demand and high prices. The overall annual solar electricity potential with current technology is about 185 kWh/m².³⁴ This is a reasonably attractive level when put in the context of the current Standard Offer Contract³⁵ support level of \$0.42/kWh.

In the case of solar thermal applications, the data of Figure 6.7 is also relevant. The likelihood of solar heating being a significant energy contributor is low. However, there are some experimental data that was not fully available at the time of this report from earlier experiments that should be evaluated before a final determination is made.³⁶ Data from this trial would be of interest to the CEP as would the operational results of the new technology solar thermal plant installed on the new Guelph Hydro Building.

³⁴ Remmer D., Rocha J.. – A Study of the Potential for Integrating Renewable Energy Technologies within the Existing Provincial Highway Transport Infrastructure of Ontario. Report prepared for Ministry of Transportation of Ontario, Highway Infrastructure Innovation Funding Program 2004.

³⁵ Standard Offer Contract

http://www.powerauthority.on.ca/Page.asp?PageID=122&ContentID=2009&SiteNodeID=161&BL_ExpandID

³⁶ Government of Ontario – Solar Hot Water Project conducted by SOLCAN – Remmer Consulting for details

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6.7.3 Wind Resources

The wind potential within the Guelph region has been evaluated in a recent project done by the faculty and students at the University of Guelph³⁷. The following two slides (Figure 6.8 and Figure 6.9) summarize their findings.

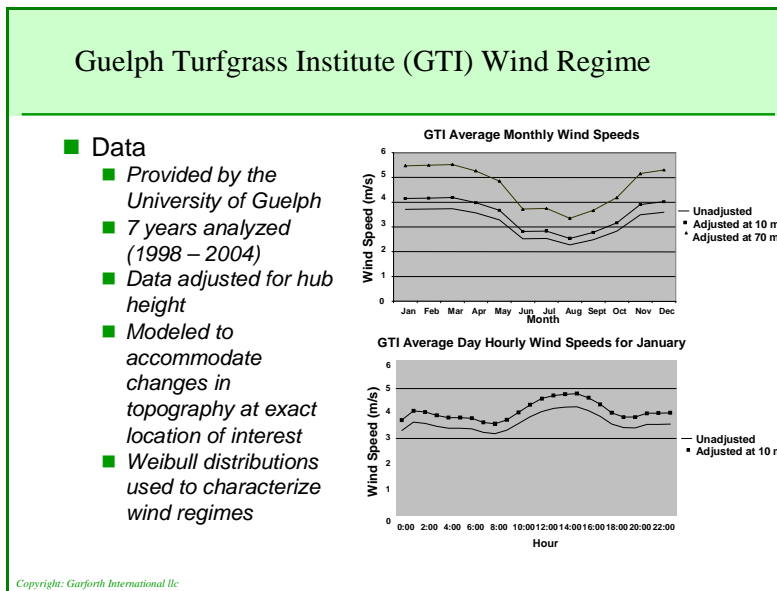


Figure 6.8 Daily Wind Pattern

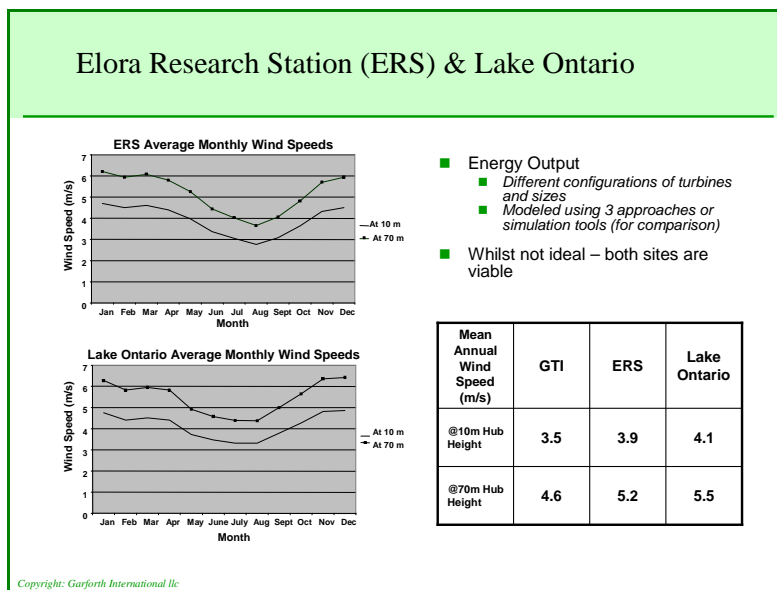


Figure 6.9 Yearly Wind Pattern

³⁷ Jessica Beuning and Dorothy Remmer, School of Engineering, University of Guelph, Summer 2004

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The wind regime is not excellent but it may provide a reasonable payback and some significant non-financial values in support of the CEP. Wind generators are visible commitments to changing the game, and as symbols, they can have a value that goes beyond cash. Recently, newer technologies and a revised Standard Offer Contract for renewable electricity with a support level of \$0.11/kWh, will also begin to push this to financial viability, especially for farmers. Last but not least, the wind regime actually compliments to the solar regime and the overall electricity demand.

6.7.4. Rainfall Data

Sixty years of rainfall data is available from a team³⁸ in the School of Engineering, University of Guelph. They are exploring the possibilities for rainwater harvesting (RWH). At this stage, the CEP is making some broad recommendations on rainwater harvesting. Given the future challenges for potable water supply, this is an area for much deeper assessment.

³⁸ Supervisor: Dr Khosrow Farabakhsh Students: Chantelle Liedl and Chris Despins, School of Engineering, University of Guelph (2006)

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7. ENERGY & WATER PROFILE TODAY

7.1. Process to Establish CEP Baseline

The achievement of the Community Energy Plan Goals will be measured against a baseline. A first effort to establish a 2005 baseline for Guelph has been conducted, and is summarized in this section. This is one of the toughest efforts for any Community Energy Plan. Obviously, the more complete the data, the more reliable the baseline will be.

The Guelph Community Energy Consortium was very forthcoming in providing what data was readily available. However, in many cases this has proved to be incomplete or inconsistent in some way, and a significant amount of refinement and adjustment of this baseline can be expected during the first couple of years of the implementation of the CEP. The requested and available data³⁹ are summarized in the following table.

Data type ▼		Data requested ▼		Requested	Not requested	Requested and received
Customer Classes ►		Total system	Residential	Commercial	Industrial	Institutional
Electricity ⁴⁰	Totals (kWh per year)					
	Peak demand (MW)					
	Monthly (kWh/month)					
Gas ⁴¹	Totals (m ³ per year)					
	Peak demand (m3)					
	Monthly (m ³ /month)					
Potable Water ⁴²	Totals (m ³ per year)					
	Numbers of buildings					
Property ⁴³	Age, type and area of buildings					
	Totals (m ³ per year)					
Heating Oil ⁴⁴	Totals (m ³ per year)					
Transport Fuels ⁴⁵	Gasoline, diesel, biodiesel (litres/year)					
	Traffic useage and patterns					
Vehicle use						

Figure 7.1 Summary of Data Availability and Needs for the Guelph CEP Project

³⁹ Data used is archived and available to the Consortium, subject to confidentiality conditions from the data owner

⁴⁰ Source: Guelph Hydro Electric Systems Inc – High completeness of data

⁴¹ Source: Union Gas – Moderate completeness of data, some confidentiality constraints

⁴² Source: Guelph Hydro Total consumption only – UoG may have periodic indications

⁴³ Source: City of Guelph – Economic Development

⁴⁴ Not available at time of report – Ontario estimate used for modeling

⁴⁵ Source: City Transportation Department plus estimates

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Where only partial data was provided, the baseline is predicted using estimates based on global, national or provincial data.

The team modeled energy use for each sector: residential, commercial, industrial and institutional. The results were compared with national and provincial statistics for credibility. Results were also compared with the utility data provided by the Consortium. Through a process of iteration and some judgment calls, indexes are derived.

In the interests of moving the CEP implementation ahead and given the inevitable data collection challenges decisions have been made. Each index and the elements that contribute to it should be revisited as data availability improves. **However, where indexes are directionally correct with reasonable confidence in the source data, the CEP development team is cautioned against becoming overly focused on data precision at the cost of moving into action.**

The following sections of the report discuss and summarize the analyses and results of modeling undertaken to establish baselines by end-use category, building sector and energy source.

7.2. Energy Use in Buildings

The sectors used for benchmarking are residential, commercial, institutional and industrial. Some overlaps exist between categories, and where this occurs, the default is to the readily available data for ease of future tracking.

7.2.1. Residential

Based on the climate, demographics and other assumptions, Figure 7.2 summarizes the energy use model for the two most common residential building types in Guelph. The single-family-detached results assume a 2-story, brick home with finished area of 214 m² and the row house results for a 2-story, brick, full basement, middle unit.

Domestic hot water (DHW) consumption and electricity use per person is calculated using the HOT2000 program⁴⁶ based on occupancy.

Home type ▼	New Ontario Code (2007)	Existing Ontario Code (1997)	1985	1975	1965	1955
	(kWh _e /m ² /year)					
Single-family-detached	163	189	268	305	335	373
Row houses	152	170	205	239	272	320

Figure 7.2 Modeled Residential Energy Use by Age and Type

Methodology:

- Modeling performed using the Natural Resources Canada HOT2000 Version 9.31 program.
- Climate was modeled for Toronto and heat loss was then increased by 3% to adjust for the slightly cooler climate in Guelph

⁴⁶ See http://www.eere.energy.gov/buildings/tools_directory/software.cfm/ID=45/pagename=alpha_list

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- Program defaults were used for Domestic Hot Water and Electrical (lighting, appliances, etc.) consumption

Modeling Assumptions:

House style:

- Single family detached: 2 Storey brick, full basement
- Row house: 2 Storey brick, full basement, middle unit
- Gas energy conversion efficiency: 80%

House finished area:

- Single family detached: 214 sq.m.
- Row house: 149 sq.m.

House components:

	New Code (2007)	Existing code (1997)	1985	1975	1965	1955
Ceiling insulation	R40	R31	R28	R17	R12	R12
Wall insulation	R19	R17	R12	R10	R10	R6
Basement insulation	R12 (to 2 ft. below grade)	R8 (to 2 ft. below grade)	none	none	none	None
Window R-value	R2.8	R1.7	R1.4	R1.4	R1.3	R1.3
Air Tightness, ACH@ 50 Pa	3.57	3.57	4.55	6.50	8.70	11.20

The “New Ontario Code” refers to the recently announced building code that raises the energy efficiency requirements of materials, structure and appliances and will be fully in force by 2012.

The energy consumption is estimated in the following categories;

- Net space heating
- Space heating fan
- Domestic hot water load
- Lighting, appliance, exhaust fan (other electrical uses)
- Net space cooling load (thermal)
- Cooling fan

The energy use for each of these categories for a single family home for the different ages and codes is summarized in Figure 7.3

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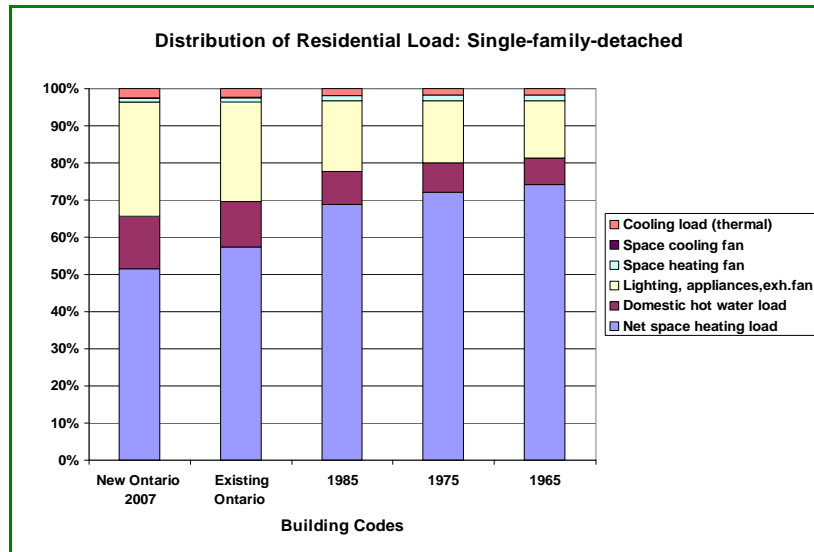


Figure 7.3 Energy Use of a Detached Home Residence Under Various Building Codes

Source: HOT2000 modeling results, of which the heat losses are shown in Figure 7.2.

Modeling Assumptions:

- Domestic hot water and electrical loads are the same for all building ages
- Domestic hot water (DHW) consumption is the default used by the HOT2000 program.
 - DHW consumption: 85 L/day plus 35 L/day per occupant.
 - Four occupants
 - Total consumption: 225 L/day
 - DHW temperature: 55°C
 - DHW energy: 5,330 kWh/year
- Electrical consumption is the default used by the HOT2000 program:
 - Interior
 - Lighting: 3.0 kWh/day
 - Appliances: 14.0 kWh/day
 - Other: 3.0 kWh/day
 - Exterior use: 4.0 kWh/day
 - Ventilation exhaust fan: 1.2 kWh/day
 - Total base load: 9,198 kWh/year

The significance of space heating load is clear. Over the years, the overall energy use has reduced considerably. Other electrical loads are gaining in share. This model assumes that all domestic hot water will be provided via natural gas heating which is not always the case for Guelph. Approximately 10% (3270 units) of all homes have electrical water heating. As comparison, statistics⁴⁷ for residential energy use Ontario are shown in Figure 7.4.

⁴⁷ NRCan, Office of Energy Efficiency

http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/tablestrends2/res_on_2_e_1.cfm?attr=0

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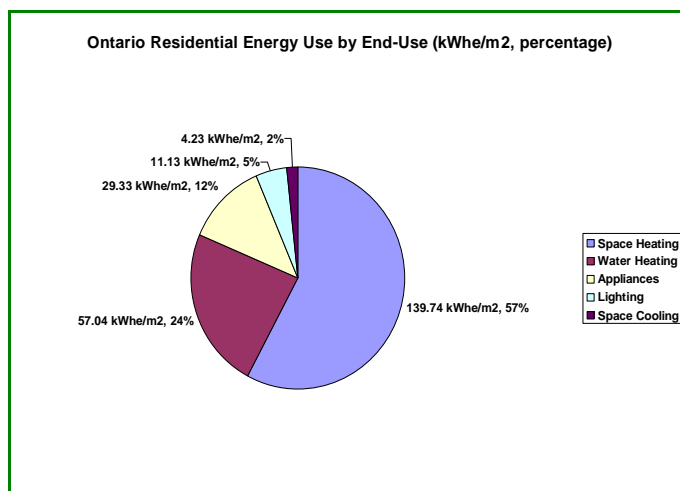


Figure 7.4 2004 Ontario Residential Energy Use by End-Use

The estimated totals for Guelph's residential energy use in 2005 are shown in Figure 7.5.

Residential Benchmarking Comparison**			
	MWh _e /year	kWh _e /m ² /year	MWh _e /capita
Canada (2004)		255	12.22
Ontario (2004)		242	12.05
Guelph (Actual)	1,609,597	309	14.00

*10% assumption each for heating oil and wood consumption

** Excludes the electrical conversion losses

Figure 7.5 Benchmarking of Residential Energy End Use in Guelph

The following section is meant to clarify sources and calculations for Figures 7.6, 7.10, 7.11, 7.12, and 7.13.

Modeling Assumptions:

Electricity:

- All raw data used to create the benchmark for electricity consumption in Guelph in 2005 was provided by GHESI.
- No conversion factor required for electricity (there is 1 MWh_e per MWh electricity)
- MWh_e/capita is derived by dividing the MWh_e amount by 115,000; the population figure used in this report to estimate the Guelph population in 2005.

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The following table summarizes the way in which the raw data was summarized to represent the broad customer categories of interest. “Other”, which is a combination of UM, un-metered loads, and SE, street-lighting, is included in the overall calculations of energy use for the citizens of Guelph.

customer categories	Residential	Commercial	Institutional	Industrial	Other
Ghesi codes that included in each customer category	R+G3+MU+SH +BS	GM+GD+GB	T1+T2+G1+G2+ FS+FP+L	GS+GP	UM+SE
Energy Consumption by category (MWh)	364,329	344,098	47,833	870,097	3,371

Gas:

- The benchmark for gas consumption in Guelph in 2005 comes from several sources that include:
 - Union Gas; both metered consumption and large contractual customers
 - University of Guelph, UGDSB, and WCDSB are all part of co-operative contracts for gas and provided their consumption figures separately
- Conversion factor of gas to kWhe: there are 10.31 kWhe per m³ gas (energy content factor published in “Canada’s Energy Outlook 1996 – 2000”, NRCan, April 1997, pg D-3)
- MWhe/capita is derived by dividing the annual MWhe amount by 115,000; the population figure used in this report to estimate the Guelph population in 2005.

The breakdown into customer categories for gas is more difficult to achieve since only the residential and industrial sectors are able to be clearly discerned from the overall data. Therefore, commercial and institutional categories are combined. “Other” comes from inability to reconcile category totals with total consumption figures as provided by Union Gas. “Other” is included in the overall calculations of energy use for the citizens of Guelph.

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customer categories	Residential	Commercial Institutional	Industrial	Other
Union Gas dwelling types that are included in each customer category	MAPTUN, MCNDU, MQUAD, MROW, MROWU, MTRIPX, RDUPLX, RCUPLX, RSEMI, RSINGL, MAPTBG, MCNDOB, MFUNCD, MROW	CD, PB, PBIS	I	
Gas Consumption by code (m ³)	93,672,244	37,865,582	28,849,604	395,447
Gas Consumption by contract		25,589,067	45,000,000	

Wood and Oil:

Numbers for wood and oil and estimated as 10% of the overall modelled space heating requirement. In each case, this amounts to 139, 753 MWh/year

National and provincial averages are expected to be lower than for an urban community like Guelph. National statistics⁴⁸ for the use of wood and heating fuel oil place consumption at about 20% of gas. With revised assumptions, the recommended residential sector benchmarks in Guelph are in Figure 7.6.

Residential Total Energy Use Benchmarks**			
Energy Source	MWh_e/year	MWh_e/Capita	kWh_e/m²/year⁴⁹
Electricity	910,825	7.9	175
Gas	965,761	8.4	185
Heating Oil*	139,753	1.2	27
Wood*	139,753	1.2	27
Totals	2,156,092	18.8	414

*10% assumption each for heating oil and wood consumption

** Includes electricity conversion losses at efficiency of 55% & transmission losses of 5%

Figure 7.6 Recommended Residential Energy Benchmarks

7.2.2. Commercial and Institutional

Commercial and institutional sector modeling was undertaken by eQuest Strategies llc.⁵⁰, and results were derived for various building types and ages. Figure 7.7 summarizes the modeling results for retail, office, and acute care hospitals. Very limited actual data was

⁴⁸ NRCAN, Table for Canada's Secondary Energy Use and GHG Emissions by Energy Source, http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/tableshandbook2/aaa_ca_1_e_1.cfm?attr=0

⁴⁹ Calculated using a residential property area of 5,205,212 m²

⁵⁰ Joe Pustai, eQuest Strategies, Cleveland, Ohio

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available. The data for the University of Guelph are based on actual usage. The ranges from a little over 200 kWh / m²/yr to over 600 are reasonable in the experience of the Team and relative to known example buildings. Hospitals always have a higher energy use than the sector average due to sterilization, patient comfort, and catering.

However, in this sector, it is important to look at individual buildings or groups of buildings. As an example, Guelph School Boards, also assumed to be institutional customers, have been aggressive in the area of energy use reduction. Their energy consumption per m² is 235 and 250 kWh/m²/yr for the UGDSB and the WCDSB respectively⁵¹. Comparisons should be made with the express consideration of the vastly different operating requirements for the different building types.

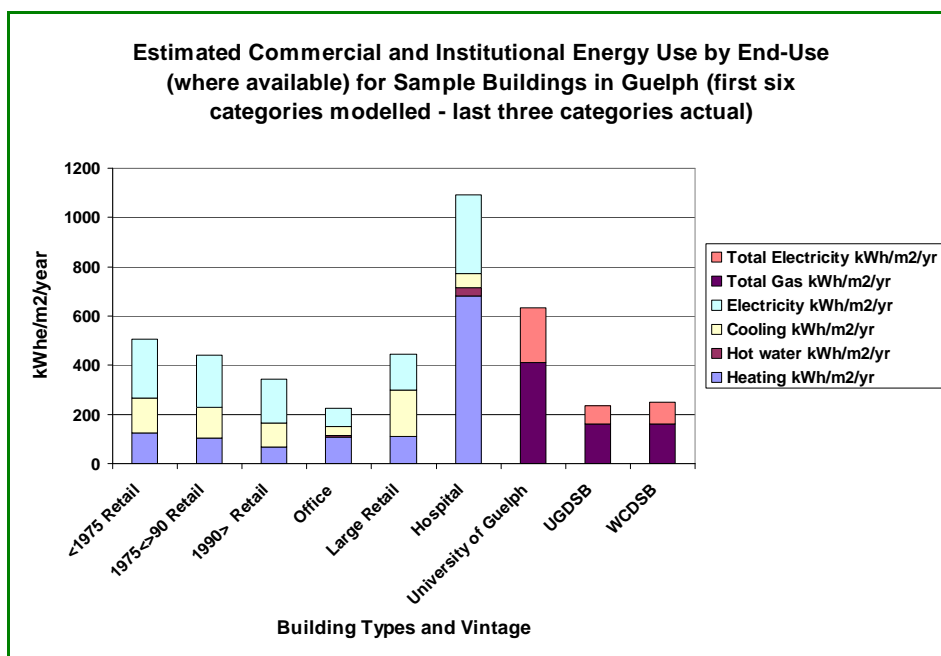


Figure 7.7 Modeled Commercial and Institutional Energy Use

Modeling Assumptions:

	Retail Strip Malls					
	< 1975	1975<-90	1990>	Office	Hospital	Large Retail
Area, sq.m.	1,858	1,858	1,858	3,404	15,370	24,732
No. occupants	200	200	200	119		1,331
Cooling temp.	23.3°C					
Heating temp.	21.1°C					
Wall U-value, W/m ² C	1.67	0.84	0.71		0.95	0.73
Roof U-value, W/m ² C	0.71	0.71	0.36		1.13	0.71

⁵¹ School Boards Facilities Management

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Modeled building results were combined with property data to project commercial and institutional energy use in Guelph. Modeled data is difficult to reconcile with actual, given the information available to the Team. One explanation is the difficulty in separating commercial and institutional in terms of energy use and also in terms of property areas. National data combines commercial and institutional classes. Figure 7.8 combines the two for Guelph, together with a comparison for Canada and Ontario.

Commercial & Institutional Benchmarking Comparison**			
	MWh_e/year	kWh_e/m²/year	MWh_e/capita
Canada (2004) ⁵²		558	10.07
Ontario (2004) ⁵³		570	10.10
Guelph (Actual)	1,046,149	621	9.10

** Excludes the electrical conversion losses

Figure 7.8 Combined Commercial & Institutional Energy Use Indexes⁵⁴

Commercial plus institutional building energy consumption accounts for 22% of the total energy use in the buildings sector. The breakdown of the energy use in terms of electricity and natural gas is summarized in Figure 7.9. The apparent higher level of per capita productivity of Guelph compared to the rest of Ontario, maybe accounted for by the partial dormitory nature of a part of the city's population.

Commercial & Institutional Energy Use Benchmarks by Energy Source			
Energy Source	MWh_e/year	MWh_e/Capita	kWh_e/m²/year
Electricity	391,931	3.4	232
Gas	654,218	5.7	389
Totals	1,046,149	9.1	621

** Excludes the electrical conversion losses

Figure 7.9: Commercial & Institutional Sector Use by Energy Source⁵⁴

These are recommended at this stage as CEP benchmarks, with the proviso that, in this sector operational benchmarks must be established by both history and building class. Some validation of the per capita index could be appropriate given its level relative to the provincial norm.

⁵² NRCan Office of Energy Efficiency, Commercial/Institutional Sector Canada Table 6: Secondary Energy Use and GHG Emissions by Region – Excluding Electricity-Related Emissions¹, http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/tablestrends2/com_ca_6_e_1.cfm?attr=0

⁵³ NRCan Office of Energy Efficiency, Commercial/Institutional Sector Ontario Table 1: Secondary Energy Use and GHG Emissions by Energy Source, http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/tablestrends2/com_on_1_e_1.cfm?attr=0

⁵⁴ Guelph indexes are based on 1,046,149 MWh_e/yr on a total of 1,689,916 m² and 115,000 population

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7.2.3. Industrial

A few large customers in Guelph account for a major portion of the energy used. A typical example is Owens Corning, with a continuous operation glass melting tank using millions of dollars of natural gas a year. Figure 7.10 summarizes the industrial energy indexes.

Industrial Energy Use Benchmarks by Energy Source		
Energy source	MWh _e /year	MWh _e /Capita
Electricity	870,097	7.57
Gas	761,389	6.62
Totals	1,631, 486	14.19

*** Excludes the electrical conversion losses*

Figure 7.10 Industrial Sector Energy Use Benchmarks

Analysis of industrial energy use only makes sense at the level of a specific industry, company or process type. In the case of Guelph, greater detail will be addressed in the next phase of the Community Energy Planning process in selected Scale Projects⁵⁵.

Not included in this assessment is the industrial use of other energy commodities such as fuel oil, propane, oxygen and other combustion gases. In many industrial processes these can be significant components of the energy mix and should not be overlooked in more detailed site-specific assessments.

7.2.4. Combined Industrial, Commercial, and Institutional Benchmarks

In support of the basic premise of the CEP to look for simple, easily tracked indexes, the Team is recommending including a “non-residential/non-transportation” index encompassing all IC&I energy use.

Commercial & Institutional & Industrial Energy Use Benchmarks*		
Energy Source	MWh _e /year	MWh _e /Capita
Electricity**	3,155,071	27.4
Gas	1,415,607	12.3
Totals	4,570,678	39.7

** Includes electricity conversion losses*

*** Assumes electricity conversion efficiency of 55% and transmission losses of 5%*

Figure 7.11 Non-Residential/Non-Transportation Energy Use Benchmarks

This is the index that will be useful as a natural link to the energy productivity economic activity of the city, and as the quality of the data improves, will naturally migrate to indexes that directly relate the city’s GDP and commercial tax base to energy use and climate change impact.

⁵⁵ See CEP Sections 10 and 11

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7.3. Energy Use in Transportation

Actual transport fuel delivery data was not available to the CEP Team. This information is difficult to obtain because it comes from a multitude of various sources (gas stations, etc.) This assessment of transportation fuel use is derived from estimates of transport patterns from the city's Transportation Planning Department, which has often been the case in other cities when faces with this issue. Transport strategies are currently under review in Guelph and, like all other reviews, is surrounded by issues of sustainable growth.

7.3.1. Basic Travel Statistics⁵⁶

- Between 1967 and 1994 daily vehicle trips increased by 160% from 105,000 per day to 270,000 per day, compared to a population increase of 74% in the same period.
- Transit trips over the period 1967 to 1994 increased 60%
- In 1967 there were 2 cars per 7 people, now there is 1 car for every 2 residents
- 42% of all households have more than 2 cars
- In 1996, 48% of all travel was directly related to commuting

7.3.2. Findings From Recent Resident Survey

- Work destinations were Guelph 77% : Wellington County 4% : GTA 7% : Waterloo Region 11%
- 81% thought that it was important to reduce car use
- 75% supported rail service between Kitchener/Waterloo, Guelph, and Toronto
- 60% supported bus service between Kitchener/Waterloo and Guelph

The city assessments were combined with national vehicle fuel use statistics for 2001⁵⁷ and extrapolated using the city demographics. Though small in current volume, the biodiesel use by the Guelph Transit Authority, as well as GHESI Fleet Vehicles and other publicly owned vehicles, is highlighted as a first step to reducing the fossil fuel content of the city's mass transit.

Figure 7.12 summarizes estimated transportation fuels use and associated greenhouse gases.

Fuel Type	Total delivery MWh _e /yr	Total delivery MWh _e /yr/Capita	CO ₂ per capita (tonnes)	Fuel Use (litres)
Gasoline	1,285,028	11.17	2.74	133,440,038
Diesel	435,187	3.78	0.96	40,520,164
Biodiesel	23,002	0.20	0.03	2,248,514
Totals	1,743,216	15.16	3.73	176,208,716

Figure 7.12 Transportation Fuel Use and Greenhouse Gas Emissions

⁵⁶ City of Guelph, Transportation Update
<http://guelph.ca/living.cfm?itemid=68785&smocid=2093>

⁵⁷ Statistics Canada, CANSIM table (for fee) 051-001

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Modeling Assumptions:

Transportation fuel use is based on the following assumptions with calculations undertaken and provided for this report by the City of Guelph Transportation Planning Department:

- fuel use for Guelph is based on national fuel vehicle fuel use statistics for 2001 (Statistics Canada, CANSIM table (for fee) 051-001) and extrapolated using population numbers
- Diesel and Bio-diesel fuel use for 2006 has been provided by Guelph Transit. Bio-diesel is used by the Guelph Transit Authority in all its buses; 5% in the winter and 10% in the summer
- GHG conversion factors for each fuel type are listed in Figure 7.13

This table estimates the use for light vehicles (cars, SUVs and light trucks) only. At this stage, no attempt was made to include the heavy trucks, rail and aircraft. In terms of the total energy use, these will be a small proportion and national averages could be applied to get an overall energy and greenhouse gas footprint for the population of Guelph. An estimate is included in the overall benchmarking.

Given the influence of transportation on overall GHG consumption, outcomes of the following initiatives currently being undertaken are of great interest to the CEP:

- Guelph-Wellington Transportation Study
- Major Roadway Improvements
- Inter-regional Transit – North Mainline Rail Service

7.4. Total Energy Use and Greenhouse Gas Emissions

A critical goal of the CEP is to reduce the overall creation of greenhouse gases considered responsible for global warming. Any gains in energy efficiency will reduce greenhouse gases proportionally. However, different energy sources cause different levels of greenhouse gases through their use. This needs to be accounted for in the overall benchmarking.

In the benchmarking tables in the previous segments, a detailed breakdown of greenhouse gas by sector was beyond the scope of this initial phase of the CEP. The one exception was in transportation where the relatively straightforward linking of fuel use and greenhouse gas emissions easily facilitates this.

To establish the overall benchmark for the Guelph CEP Goal 3, Figure 7.13 summarizes the greenhouse gas creation directly attributable to the energy use within the city boundary.

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GHG Production by Energy Type in Guelph			
Energy Source ▼	MWh_e	Conversion Factor	Tonnes CO₂
Electricity (Net)	1,629,730	0.272 kg CO ₂ /kWh	443,286
Electricity* (Gross)	4,074,325	NA	NA
Gas	2,381,368	0.370 kg CO ₂ /m ³	85,461
Oil	139,753	2.830kg CO ₂ /L	38,029
Wood	139,753	NA	NA
Gasoline	1,285,028	2.360 kg CO ₂ /L	314,918
Diesel	435,187	2.730 kg CO ₂ /L	110,620
Biodiesel	23,002	1.907 kg CO ₂ /m ³	3,773
Totals	8,478,416		995,769

*assumes an electricity conversion efficiency of 55% plus 5% transmission and distribution losses

Figure 7.13 Summary of Energy Use and GHG Production by Source⁵⁸

This gives us the key data to benchmark energy use per capita and greenhouse gas creation per capita.

Per Capita Energy Use and GHG Emissions		
	MWh_e/Capita	Tonnes CO₂/Capita
Guelph (2005)	73.73	8.66
Canada (2004)	101.02	23.72

Figure 7.14 Per Capita Energy Use and GHG Production within Guelph⁵⁹

On the surface this suggests that Guelph is doing pretty well relative to the Canadian national average relative to greenhouse gasses. However, the following aspects need to be considered:

- No truck, maritime or aviation emissions are included. On a prorated basis this would add about 3.0 Tonnes/capita.
- No significant mineral, metals, mining or pulp and paper emissions are included. Again on a prorated basis this would represent 1.44 Tonnes/capita.
- No significant domestic refining and fossil fuel production destined for use in Canada. Again, this represents about 2.07 Tonnes/capita
- The bulk of the rest of the difference is from the fact that Ontario/Guelph has relatively low carbon electricity (272 kg/MWh) as opposed to some other provinces where coal is a much larger factor and the greenhouse gas emissions rate is in excess of 900kg/Mwh.

Each area of Canada will have distinctive profiles, and a final decision for the baseline for Guelph needs to be made by the Consortium. The current recommendation of the CEP is to use a per capita greenhouse gas index for Guelph of 15.17 Tonnes⁶⁰, reflecting the reality that every citizen of Guelph is part of the overall national economy, and that Canada, in turn, is a part of the global climate challenge.

⁵⁸ GHG Conversion factors are sourced from Environment Canada, "National Inventory Report, 1990-2003; Greenhouse Gas Sources and Sinks in Canada". <http://www.ec.gc.ca>

⁵⁹ Guelph per capita energy use based on 8,478,416 MWh_e/yr divided by a population of 115,000. Per capita CO₂ based on 995,769 tonnes divided by 115,000 population.

⁶⁰ Benchmark CO₂ for CEP purpose is .66 tonnes/capita from local energy use plus 3.0 tonnes (maritime, truck, aviation), 1.44 tonnes (other national industry), and 2.07 tonnes (domestic energy industry).

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In summary, for the energy use per capita index, the CEP is recommending using the 73.73 MWh_e since the totality of this number can be affected by specific actions from the community. In a similar way the greenhouse gas per capita of 8.66 reflects controllable activities within the community.

7.5. Water

Water is an issue of major concern to the citizens of Guelph, and as stated earlier, has been the subject of a recent major strategic evaluation in the form of a 50-year Water Supply Master Plan that, in compliance with the Ontario Environmental Assessment Act, included an assessment of all options for future water supply, including a pipeline to Lake Erie.

The average daily potable water use for Guelph in 2005⁶¹ was 52,579 m³ with a maximum daily demand of 67,975 m³. The average household demand is 230 - 250 liters/equivalent population/day⁶². This latter figure can be compared with data from the EU for household water consumption.

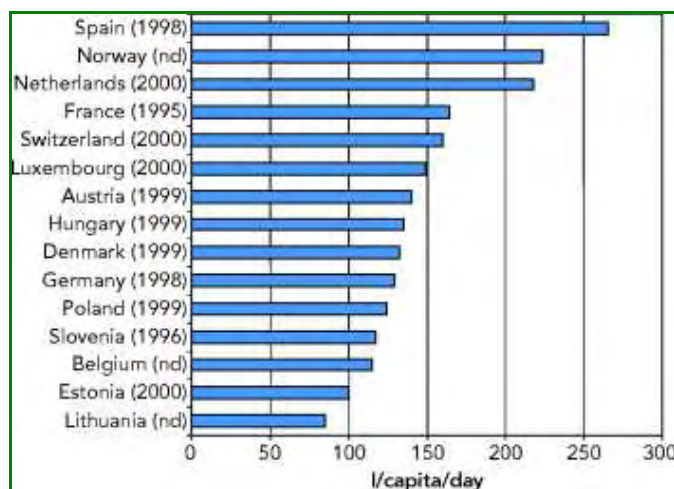


Figure 7.15 Per Capita Household Water Use for Selected EU Members

Countries with comparable living standards and economy to Canada could be Germany or Denmark in this data set, where average household use per capita is about 125 liters/capita/day.

⁶¹ Waterworks Summary Report 2005-page 11.

(http://guelph.ca/uploads/ET_Group/waterworks/Waterworks_Summary_Report_2005.pdf)

⁶² Associate Professor Khosrow Farabakhsh, University of Guelph, School of Engineering

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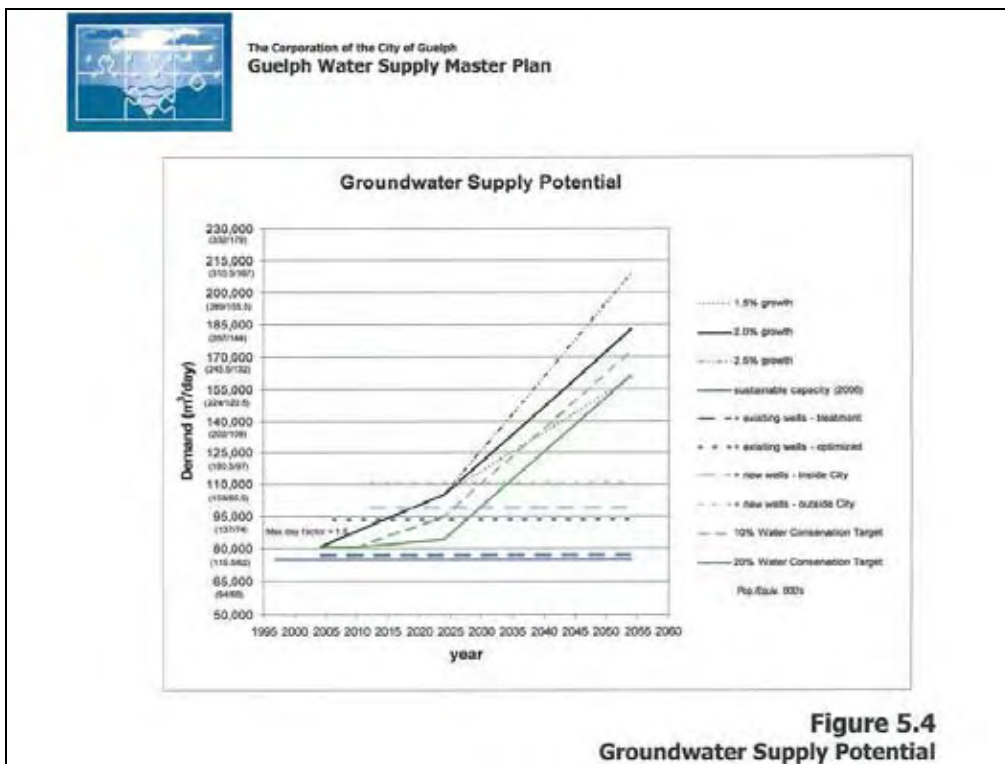


Figure 7.16 Projected Water Demand for the City of Guelph to 2055⁶³

(See Appendix 8 for Full Size)

Under current estimates, the maximum water needs for Guelph will rise to about 110,000 m³/day by 2031, clearly indicating the need either for new supplies or substantial improvements in water efficiency. As with energy, and as the benchmarking with the EU indicates, there is enormous potential for conservation measures to delay the need for large infrastructure investments. The city's completed Water Supply Master Plan (WSMP)⁶⁴ recommends an update to the city's 1999 Water Conservation Plan to identify all possibilities for reducing water demand and increasing supply.

7.6. Energy Supply and Organization

7.6.1. Brief History of Energy Regulation in Ontario

Energy regulation⁶⁵ in Ontario began in 1907 aimed, in part, at preventing the wastage of natural gas. Since that time there has been constant effort at regulation towards the goals of economic efficiency driven by competition. The *Ontario Energy Board Act, 1960* created the Ontario Energy Board to set reasonable rates for selling natural gas. The OEB also became the agency to authorize the routing and construction of gas and oil pipelines. In 1965 an amendment allowed the OEB to determine gas prices and gave them regulatory powers relative to gas companies.

⁶³ City of Guelph, Growth Management Workshop, May 2006

⁶⁴ <http://guelph.ca/living.cfm?subCatID=1403&smocid=1986>

⁶⁵ Excellent summary for further reading - <http://www.oeb.gov.on.ca/html/en/abouttheoeb/history.htm>

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In 1973, the Ministry of Energy was established including the OEB and extended their jurisdiction to include rate and rate-related matters of Ontario Hydro, thereby including electricity as well as gas.

In the early 1970s, the oil crisis in the Middle East caused natural gas prices to soar. Ontario Hydro turned to nuclear generation and the public became conservation conscious.

The OEB's mandate changed with the passage of the *Energy Competition Act, 1998*, aimed at establishing a competitive market for electricity and natural gas. The Ontario Hydro monopoly broke into several entities including two commercial companies; Ontario Power Generation (OPG) and Hydro One Inc. and one Crown corporation, the Independent Electricity System Operator (IESO). All three operate independently.

OPG is responsible for electricity generation and Hydro One owns and maintains monopoly transmission and distribution wires. The IESO's task is to manage the wholesale electricity market and deal with system emergencies. It collects offers from competing generators and bids from purchasers, settles accounts, monitors compliance of market rules and the performance of market players.

The *Energy Competition Act, 1998* (ECA), expanded the OEB's mandate. The OEB now regulates all local electricity distribution companies for compliance with various market rules and ensuring they do not abuse their market positions. Both the IESO and the OEB advise the government on overall market performance and to alert them of any problems arising from OPG's dominant market position.

In 2002, Ontario's new electricity market opened. Generating electricity became a competitive activity, with electricity bought and sold on the new spot market at competitive prices with IESO successfully operating the wholesale market. Over the summer of 2002, record-high temperatures drove up the demand for electricity as well as the market price, which resulted in considerable consumer concern. In response, the government introduced the *Electricity Pricing, Conservation and Supply (EPCS) Act, 2002*, which capped electricity prices for residential, small-business and other low-volume consumers. Under the Act, all transmission and distribution rates were frozen through 2006. Utilities were constrained in asking for rate increases. The Board was actively charged with promoting conservation.

By 2003, the OEB was a self-financing Crown corporation. In the same year they were given new pricing mechanisms to more accurately reflect the true cost of production and to ensure the electricity infrastructure had sufficient investment. This included allowing distribution companies to recoup some frozen costs.

In 2004 the Ontario Power Authority (OPA) was established to develop a plan to restructure the electricity sector to encourage new electricity supply, energy conservation and stable prices at a level reflecting the true cost of electricity. OPA's role formally included the establishment of a Conservation Bureau to provide leadership in planning and coordination of electricity conservation and demand management.

On the gas front, the natural gas sector has been evolving since the federal/provincial agreement in 1985 that deregulated the priced supply at the wellhead. In recent years the growth of natural gas marketers in the wholesale and retail markets has meant more choice for consumers when purchasing their natural gas commodity. The delivery of natural gas between provinces remains regulated by the [National Energy Board](#) and, within Ontario, by the OEB.

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7.6.2. Distribution of Natural Gas in Guelph

The gas distribution system is privately owned and operated by Union Gas, a division of Spectra Energy, operating under the regulatory constraints of the OEB. Gas pricing is tied to the broader market place, and is subject to fluctuations. This is most noticeable for residential users, since larger users negotiate longer term pricing contracts. In addition to Union Gas, customers or groups of customers can buy gas directly from the market or through gas marketers. These options are provided to give customers more market choice. Essentially though, marketers are selling customers futures in gas.

The gas distribution companies also manage energy conservation programs under the auspices of the OEB and other legislation, and these are summarized in Section 8.

7.6.3. Distribution of Electricity in Guelph

Guelph Hydro Electric Systems Inc. (GHESI) is a municipally owned Local Distribution Company (LDC) operating under the rules of the OEB and regulating pricing mechanisms. OPG has most of Ontario's centralized generating plants, with Hydro One Inc. operating the transmission network. GHESI is allowed to develop new businesses, but must keep these clearly separated from its core, monopoly electricity distribution business. These businesses operate in the open market as independent companies. An example is Ecotricity which uses gas recovered from the Eastview Landfill to generate electricity.

The city is the sole shareholder of Guelph Hydro Electric Systems Inc., which in turn, is the sole shareholder of Guelph Hydro Electric Systems Inc. and Ecotricity. They operate as normal tax⁶⁶ paying business corporations. The City Council appoints the Board of Directors for each business. The GHESI Board comprises eight private Directors and a representative from Council.⁶⁷

Figure 7.17 summarizes Guelph's electricity demand in 2005, measured at the three main Hydro One-owned transformer stations:

- Campbell, to the north off Dawson Road
- Cedar, south of the river off Municipal Street
- Hanlon, next to the new GHESI offices in the Hanlon Business Park

⁶⁶ Called Payments in Lieu of taxes (PIL's) used to pay off the stranded debt of the former Ontario Hydro.

⁶⁷ Guelph Hydro, Message from the President, <http://www.guelphhydro.com/GuelphHydroWeb/index.html>

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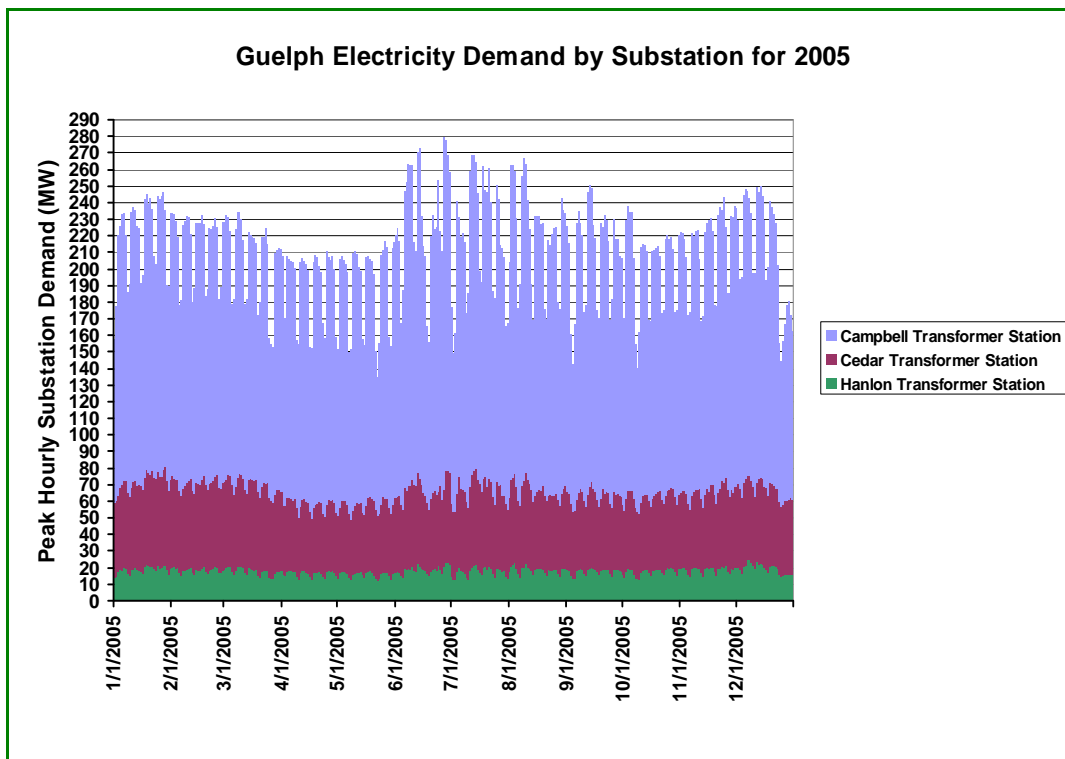


Figure 7.17 Guelph Electricity Demand (MW) Broken Down by Substation for 2005

Electricity demand has a summer peak of approximately 280MW, a winter peak of about 250 MW, and base load is close 130 MW. Figure 7.18 provides another view of the annual electricity demand on an hourly and weekly basis. This is a convenient overview that clearly shows the overlap between the times of high demand, and the high solar radiation shown in Figure 6.4, boding well for the potential attractiveness of solar electricity as a peak supply option.

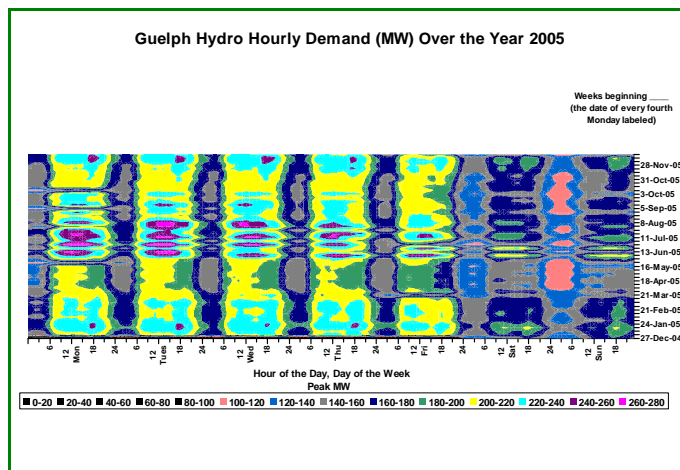


Figure 7.18 Hourly Electricity Demand in Guelph for the Year 2005

(See Appendix 8 for Full Size)

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Electricity peak demand is forecast to increase by nearly 30% in the coming decade mostly driven by increased air conditioning in new and existing homes and buildings. This is summarized in Figure 7.19.

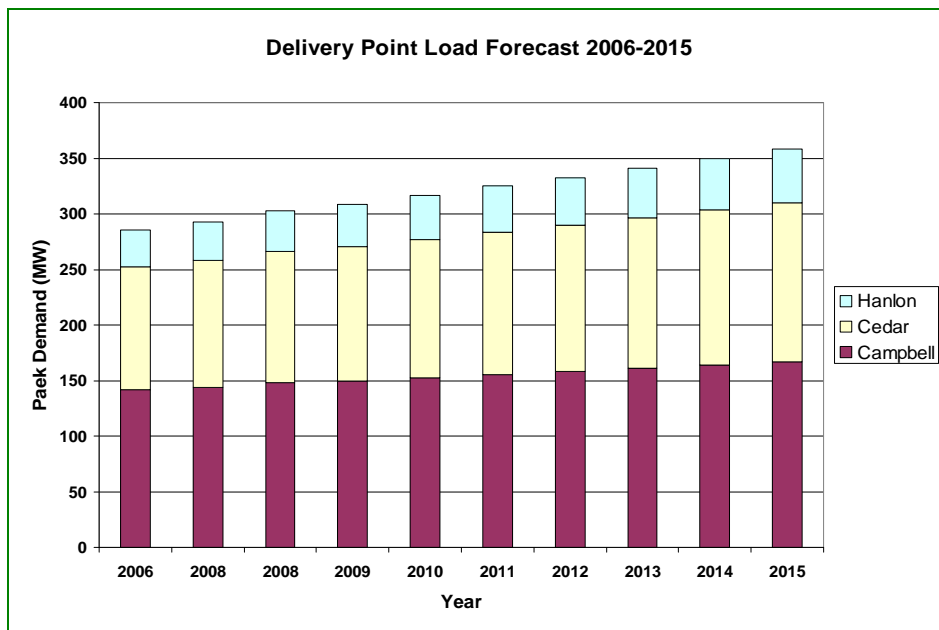


Figure 7.19 Electricity Demand Forecasts for Guelph 2006 - 2015⁶⁸

This rate of increase, if unchecked by efficiency and alternative supply strategies, will put significant investment pressure on GHESI and the city.

GHESI has a number of active conservation programs, guided by the Ontario Conservation Bureau. A summary of these can be found in Section 8

⁶⁸ Load forecast data based on raw data supplied by GHESI

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8. COMMUNITY ASSETS IN COMMUNITY RELATED AREAS

8.1. Overview

The long term success of the Community Energy Plan will only be achieved by mobilizing many parts of the community. Guelph is blessed with a wide range of organizations, companies and individuals that already have much of the motivation and expertise needed. This is reflected in the wide-ranging membership of the CEP Consortium itself.

This section summarizes a cross-section of these so-called Community Assets, including individuals, physical structures, natural resources, institutions, businesses, or informal organizations. The assets presented are a cross-section that illustrates what already exists within the community in energy related areas.

The CEP Consortium should see this as the first step in developing a constantly updated pool of expertise, experience, services and products. This will develop an awareness of the resources available, build new relationships that reinforce each other, and increase the probability of a successful implementation of the Community Energy Plan.

8.2. Guelph School Districts

The success of the CEP requires an enduring commitment making the education of primary, middle and secondary school pupils around sustainability key to its overall success. This education includes both being in schools where energy is clearly managed well and where they can be actively involved. Both of Guelph's school boards Upper Grand District School Board (UGDSB), and the Wellington Catholic District School Board (WCDSB) have embraced this role and actively promote energy and water conservation in their schools.

Many schools also have staff/student groups that actively encourage good sustainability practices. At a recent consortium CEP workshop, student representatives of many of these groups shared their successes and were invited to suggest ways to improve the energy and water performance of their schools. The overview slides and the summaries of the student presentations are attached in Appendix 2.

Both boards have undertaken serious upgrades, retrofits, and improvements to new building standards. They are systematically upgrading building management systems, heating, ventilation, water and lighting systems, which have already resulted in significant cost savings and environmental benefits. The two boards have combined forces with others to cooperatively purchase energy further improving the economic performance of their energy systems.

In 2003 the UGDSB developed and launched the Energy W.I.S.E. (We're Into Saving Energy) program to "focus attention on energy conservation"⁶⁹. Its goals were two fold. Firstly to encourage the staff/student energy teams and clubs. At a conference, the Board hosted speaker David Suzuki and awards were given to recognize the achievements of groups such as the John F. Ross CVI Environment Club. Energy W.I.S.E. continues to be the vehicle for promotion of energy and water conservation efforts in its schools.

In parallel, working in partnership with the energy services company, Ameresco, the UGDSB committed to invest over \$12M in a wide range of energy and water efficiency improvements. These wise investments have all paid back in less than eight years, and in many cases, much

⁶⁹ UGDSB Director's Annual Report, 2004 - 2005

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faster⁷⁰, clearly underlining the value of sound energy management as a way to free up valuable resources to pay teachers and educate students.

Since 1999 the WCDSB has embarked on an ambitious program to build new and upgrade several existing schools which has resulted in greater energy efficiency throughout the Board's schools. Approximately \$75 million was spent between 1999 and 2005 which increased the total area of buildings by 42%. However, in the same period energy use decreased from 277 to 250 kWhre/m²/yr, a savings of almost 10%.

New WCDSB schools have been built with energy efficiency in mind and those built within the last three years are achieving energy consumption figures between 146 and 197 kWhre/m²/yr. Retrofits during the summer of 2006 included boiler, roof, and window replacements at several schools, and these should continue to improve energy conservation. These retrofits will continue to be made throughout 2007.

Collectively the UGDSB and the WCDSB stand out as examples to the community, and more importantly, to the next generation of citizens.

8.3. City of Guelph Commitment to Efficiency

The City of Guelph is showing growing leadership in the area of energy and water conservation, and the creation and adoption of the CEP will be a clearly visible reinforcement. Among many are:

- Addition of energy efficient systems to the city-owned Senior Center
- The cogen facility at the city's landfill site, in partnership with GHESI (Ecotricity)
- The cogen facility at the WasteWater Treatment Plant, in partnership with GHESI
- Current work with GHESI to improve operating efficiencies at the WasteWater Treatment Plant through replacement of existing equipment with high efficiency options
- Current work with GHESI to explore energy efficiencies at the Material Recovery Facility at the city's Wet-Dry Solid Waste Management Facility
- Use of biodiesel in city buses
- Free transit to entire community on National Clean Air Day
- Subsidization of rain barrels, toilet replacement, washing machine replacement
- Outside Water Use Program
- Other water conservation programs (mentioned elsewhere in the report)
- Annual Children's Ground Water Festival
- Investigation of adjusting water billing rates to promote conservation
- Water/WasteWater IC&I capacity buy-back program
- Introduction of fuel efficient vehicles to the city's fleet for assessment
- Replacement of incandescent bulbs to LED in all traffic signals
- Programs to encourage use of transit to seniors, high school students and university students and large industrial areas or individual facilities
- The City Council's commitment in 1998 to meeting the Kyoto targets by 2010

⁷⁰ Upper Grand District School Board, Energy Retrofit Project Update, memo, April, 2005

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Such leadership is also becoming evident in new buildings.

8.3.1. Southend Library

As yet another early indicator of innovation, in 1883 the City of Guelph was the first municipality in Ontario to establish a Free Public Library. The Westminster Square Branch was recently completed and is an example for the use of natural lighting in a public building.



Figure 8.1 Westminster Square Branch Library

8.3.2. Guelph City Hall

The concept for the new Civic Administration Centre approved in 2005 is forecast to achieve the LEED (Leadership in Energy and Environmental Design) rating. LEED includes enhanced focus on the energy use and water use characteristics of the building.

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Figure 8.2 Original and Final Concept Designs for the New Guelph Civic Administration Centre⁷¹

A full list of all the environmentally focused elements that will be included in the building appears in Appendix 3.

8.4. Guelph Hydro Administration and Service Centre

The new Guelph Hydro Administration and Service Centre is a clear demonstration of their commitment to high environmental standards as an essential element of running a successful and responsible business. It is an example of energy conservation and energy management, and a good design example for businesses throughout the community.



Figure 8.3 Guelph Hydro Administrative Centre

Energy features of the building include:

- Geothermal system estimated to offset 300 tonnes of CO₂e emissions annually

⁷¹ City of Guelph Website, New Civic Administration Centre,
<http://guelph.ca/cityhall.cfm?subCatID=1508&smocid=2087>, accessed Dec 2, 2006

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- 5 kW rooftop photovoltaic array,
- Solar thermal system for hot water production,
- Indirect lighting technologies
- Waste heat recovery



Figure 8.3 Guelph Hydro Administrative Centre Energy Efficient Features

(Geothermal control center; daylighting roof, windows that open; solar PV and thermal technology to be installed on rooftop)

The building is LEED certified and is a pleasure to work in. It will be the first building in Canada to request European Energy Performance Certification⁷². It is also one of the largest renewable energy sites in southwestern Ontario⁷³.

8.5. Woolwich Arms Hotel Sustainable Business Approach

This is a pub that supports the view to “Think Globally, Act Locally”, an underlying philosophy of the Arrow Neighborhood Pub Group. It serves locally produced craft beers and food. Transportation of food is a major contributor to GHG emissions and transportation energy use. “In Canada, the food we eat has traveled, on average, 2,500 kilometres to reach your plate!”⁷⁴

In addition to its focus on local produce, the Woolwich Arms purchases 100% wind power to run its operations.

8.6. Owens Corning “Energy: Mission Possible”

Owens Corning (OC) is a major employer in the City with a Composite Fibreglass plant on York Road. It is also a major energy user, like most OC facilities around the world. Starting in 1998, OC put in place a multi-dimensional energy productivity program – Energy: Mission Possible – to increase energy productivity by 20%. Within five years, energy productivity had increased by nearly 30%, equivalent to about \$80M profit contribution in their worldwide business. The Guelph plant was one of the best energy performers in the company, and remains so today.

⁷² Danish 2006 Standards will be used – see Section 10 for more background on EU EP Certification

⁷³ GHESI, Official Opening Ceremony, October 12, 2006

⁷⁴ The Arrow Neighborhood Pub, Newsletter, <http://www.arrowpubs.com/>, accessed December 10, 2006

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In terms of physical assets, the glass melter still has a high level of un-recovered heat produced 365 days a year that is being considered as a possible source for integration into a district energy concept in St. Patrick's Ward.

8.7. University of Guelph and Conestoga College

The University of Guelph (UoG) is a member of the CEP consortium. It is the largest educational institution in Guelph. The University is a renowned research institution that includes many science buildings, growth facilities, a hospital, greenhouses, high density student housing, athletic facilities and other high energy use facilities. As one of the largest users of energy in Guelph, it is showing great leadership in managing energy costs and impacts.

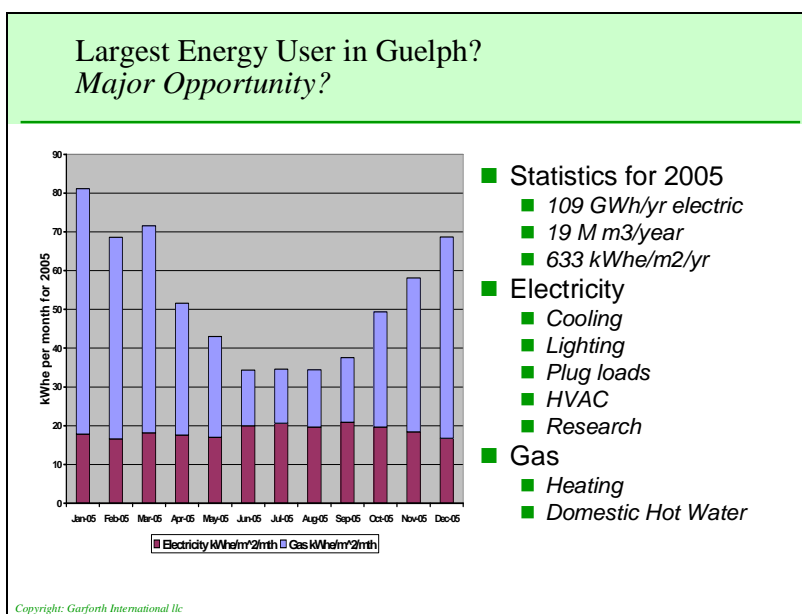


Figure 8.4 University of Guelph Energy Consumption for the Year 2005

Electricity demand is relatively constant through the year, with heating and cooling supplied by a centralized district heating and cooling system. The University has adopted a systematic approach to managing energy efficiency and costs, concentrating on projects with the best financial payback and those that improve the deferred maintenance situation.

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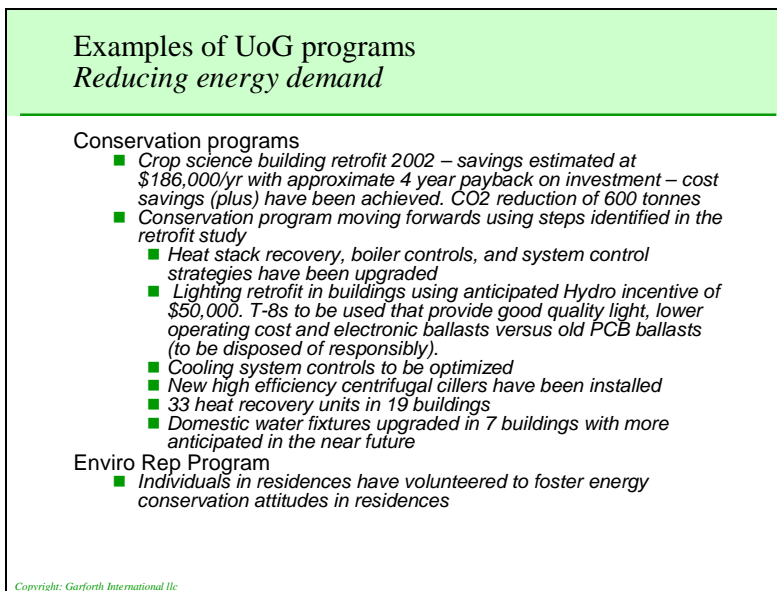


Figure 8.5 Examples of UoG Energy Efficiency Programs

These efforts are ongoing, with significant opportunities still to be harvested. The University has a Sustainability Coordinator who actively participated representing the University on the CEP consortium. In Section 11.3, the University is discussed briefly in terms of its role as a potential scale project within the long term plans for Guelph.

Both the University and Conestoga College can be also key Assets for the CEP by serving the community as a place to learn the planning, management, technical and business skills associated with the rapidly changing energy future.

In 2006, the University of Guelph's Office of Research⁷⁵ summarized all energy related activities within the University. A database summarizing the activities of over 80 individuals plus other programs on the Campus is now available. Each of these institutions, along with the City's schools, can be breeding grounds for the community energy practitioners of the future serving the City, Canada and the World.

8.8. Guelph Hydro Conservation and Demand Management (CDM) Program

In 2004, the Ontario Energy Board (OEB) allowed local utilities like Guelph Hydro Electric Systems Inc. (GHESI), to invest in and track actions to both reduce electricity demand through conservation and better management of peak loads, so called Conservation and Demand Management (CDM) programs. Approval was given to invest \$163 million to Ontario electrical distributors over three years from 2005 with a goal to reduce electricity demand by 5% by 2007.

The cash was generated through an entitlement that allowed Local Distribution Companies (LDCs) such as GHESI to recover incremental revenue through its electricity rates, as long as this was re-invested in an equivalent amount in CDM initiatives. These revenues had previously been unrecoverable due to a rate freeze.

⁷⁵ Project Leader – Karen Farbridge : Research Student: Matthew Fox

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GHESI has been very active in developing a wide range of programs with the details publicly available on the Ontario Energy Board website.⁷⁶ In 2005 alone, the GHESI programs avoided 22,000 MWh of use through education, low-income family support, efficient buildings and air conditioner efficiency programs. Further details of these are summarized in Appendix 4.

The following initiatives will be supported from 2006 onwards:

- **Low Income – Residential:** GHESI plans to team with Green Communities Canada to expand on an energy efficiency assistance program targeting low income electrically heated homes, to deliver “extended measures” such as draft-proofing as well as basement and attic insulation.
- **System Optimization and Distribution Loss Reduction:** GHESI will install equipment to reduce its distribution system losses through the installation of capacitor banks on distribution feeders where power factor correction is warranted.
- **Distributed Energy:** GHESI will complete the installation of a 500kW natural gas fired stand-by generator at GHESI’s Administration and Conference Centre. This generator will be able to contribute to provincial load reduction efforts by offsetting GHESI’s building load during those periods when system demand is high.
- **Metering Pilot:** The SMART Metering Pilot started in 2006 and will continue in 2007 to further assess metering, communications, data flow and business processes. GHESI will look at opportunities for load control through the Smart Metering infrastructure, and will use the Smart Meter interval data to educate customers on their energy use and consumption patterns, which may assist the customer in managing their energy costs. (see Appendix 5 for more details)
- **Load Control:** GHESI will explore load control options to disable customer loads during system peak periods to relieve pressure on the electricity grid.
- **Energy Efficient Building Upgrades:** GHESI will work with the University of Guelph to reduce campus energy consumption through lighting upgrades and energy efficiency improvements.
- **City Leadership – Waste Water Treatment:** GHESI will team with the City of Guelph WasteWater Treatment Plant to install and commission a 2 x 290 kW cogeneration facility. This facility will produce energy from the waste treatment process, and reduce the treatment plant’s energy needs.

In addition to the programs identified above, GHESI is pursuing multi-year funding to support other energy efficiency initiatives in the community.

⁷⁶ Ontario Energy Board, Conservation and Demand Management, http://www.oeb.gov.on.ca/html/en/industryrelations/ongoingprojects_distconservation.htm, accessed September, 2006

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8.9. Union Gas Conservation and Demand Management (CDM) Program

Union Gas's CDM programs very much are focused on education⁷⁷ and incentives. The Union Gas website offers a great deal of information for consumers regarding improving efficiency in the home and the environmental benefits of gas conversion.

With the heightened focus on CDM across all energy sectors, the OEB issued a decision in August 2006 that will require the gas utilities in Ontario to follow similar processes as do the electric utilities. Union Gas will submit a 3 year CDM plan for the period beginning in January 2007.

Union Gas is the leader in developing and driving Demand Side Management (DSM) and Conservation and Demand Management (CDM) Programs in Ontario. Since 1998 Union Gas programs have saved customers in excess of 450 million m³ of natural gas.

Union Gas Limited offers financial, educational and marketing support to our end use customers and energy partners such as architects, consulting engineers, energy service (ESCO) companies and trade contractors, who offer energy efficient products & services in the residential, institutional, commercial and industrial markets for retrofit and new build projects. Energy efficient solutions in building design, HVAC system & equipment selection, process improvement and operating and maintenance procedures are supported in all markets. Union Gas's programs assist partners in developing new products & services and delivering value to customers through lower operating costs.

The following Initiatives are delivered or supported by Union Gas:

Hot Water Conservation Program – Energy Savings Kits consisting of Low Flow Shower Head, Kitchen and Bathroom Aerators, pipe wrap and the Union Gas Wise Energy Guide are available for residential home owners at no cost to them, while shower heads and aerators are supplied to Social Housing, Multi-Family and Hotel/Motel facilities at no charge. Also, the supply and installation of low-flow pre-rinse Spray Nozzles in Commercial Kitchens located in the Institutional, Food Service and Hotel/Motel facilities are available at no charge.

Energy Savings Program - Incentives are available for the installation, in both commercial retrofit and new build projects, of; Energy/Heat Recovery Ventilators, High-Efficiency Condensing Furnaces (retrofit applications only), Programmable Thermostats, Rooftop Units, Infrared Heaters, Condensing Boilers, and Demand Control Kitchen Ventilation Units.

Custom Application Program - Variable funding is available to support the implementation of high efficiency HVAC equipment/systems in commercial applications (exclusive of Energy Savings Program). Typical projects include building controls, process equipment and building envelope measures and are subject to a financial model, based on the natural gas savings, as well as the life expectancy and the incremental cost of the proposed higher efficient alternative.

Boiler Auditing Program & Steam Trap Survey – Financial assistance is available to support the testing, identification and continuous re-commissioning of condensing boilers and condensate return systems.

Feasibility Study Program & Design Assistance Program – Financial assistance is available for a building modeling study that examines the energy and environmental performance of a new or major-renovated commercial/institutional building during the design phase.

⁷⁷ <http://www.uniongas.com/home/ngforhome/energyEfficiencyIndex.asp>

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The Union Gas website (www.uniongas.com) includes detailed information on how residential and commercial customers can improve their energy efficiency, decrease their consumption of natural gas and save on their total energy bill.

8.10. City of Guelph Water Conservation

Water conservation and supply are priority issues for Guelph. All possibilities for reducing water demand and for increasing supply are to be investigated and a more aggressive approach to water conservation is planned for the near future.

The water related programs that are currently supported by the City:

- **Royal Flush Toilet Rebate Program:** Rebates of both \$40 and \$60 (multi-residents and single-family dwellings) are available for each low-flush (6-litre or less) toilet replacement of a traditional high water use one. This alone reduces household water use by 15%. This program registered 4,500 replacements between 2003-2006.
- **Wastewater Flow Reduction Programs:** One-third of the City's electricity costs are for wastewater treatment. There is an urgent requirement to reduce flows into the wastewater system to save energy and postpone the need for expansion to the existing system. Targets established in 2001 for both electricity reduction and waste flow reductions are being met.⁷⁸
- **Storm Water Management:** The city has guidelines with respect to storm water management. The guidelines provide for a variety of storm water outlets with some of these outlets resulting in runoff to green spaces and corridors that can also be used for recreational uses such as walking and biking purposes.⁷⁹
- **Comprehensive Public Education and Awareness Program** – Targeted all households from 2001-2006
- **Multi-residential Washing Machine Replacement Program** – In partnership with GHESI
- **Industrial, Commercial, and Institutional Water/WasteWater Capacity Buy-back Program**
- **Outside Water Use Program** – Aggressive citywide program ensuring that the community minimizes use of water for lawn watering and car washing, etc.

8.11. Organizations Supporting Sustainable Objectives

The following lists organizations of all types that have a significant role in supporting sustainability and resource efficiency goals. This gives an impressive view of the breadth of expertise already available. This list is representative, and should be seen as the basis for building more complete Asset directories in the future.

- **Guelph Environmental Leadership:** A partnership of volunteers throughout the community that *“support progress toward responsible behaviors that improve sustainability, resilient ecology, healthy people, reduced costs and lasting resource use.”*

⁷⁸ City of Guelph, Growth Management Workshop, May 24, 2006

⁷⁹ Don Kudo, P.Eng, Community Design and Development Services – Engineering Services – City of Guelph

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- **Guelph Chamber of Commerce:** An important gateway to the business community of Guelph. As illustrated by its membership in the CEP consortium, the GCC is committed to a sustainable future in the belief that supporting environmentally appropriate growth and investment in Guelph is good for business and for the community as a whole.
- **Guelph Business Enterprise Centre:** Supporter of start-up businesses in Guelph. Seminars run at the GBEC will soon include training for small- businesses in the opportunities presented by energy productivity.
- **Guelph Rotary Club:** Rotary members are involved fostering a strong environment through committee work, and assisting seniors.
- **Green Plan Steering Committee:** City committee with the mandate to implement and update the Guelph Green Plan and to update the State of Sustainability Report (SOSR).
- **Environmental Advisory Committee:** City committee that provides technical advice and assistance, where needed, to city staff and council on environmentally sensitive development applications.
- **Guelph Round Table:** The Guelph Round Table (GRT) is a group of volunteers working towards a sustainable, healthy Guelph by “catalyzing community discussion and action that integrates environment economic and social issues”.
- **Run of River Committee:** A newly formed interest group to investigate the feasibility of drawing run-of-river hydroelectricity from the river systems around Guelph
- **Trees for Guelph** - A group of volunteers formed Trees for Guelph in 1990 to improve the local environment and the understanding of the environment by undertaking educational tree planting. TFG’s work is supported by a wide range of corporations, schools, service organizations and public sector organizations. In addition to tree planting, they have also embarked on special projects involving both neighborhood improvement and naturalization of private and public landscapes. They are a not for profit charitable organization. (<http://www.treesforguelph.ca>)
- **Neighbourhood Groups:** Neighbourhood groups in Guelph are extremely active and frequently engaged in environmental and sustainable initiatives. They are the natural grass-roots structures to support the Community Energy Plan. Among them are:
 - *Grange Hill East Neighborhood Group*
 - *Two Rivers Neighbourhood Group*
 - *Exhibition Park Neighbourhood Group*
 - *Onward Willow Better Beginnings Better Futures Project*
 - *Hanlon Creek Neighbourhood Group*
 - *Old University Neighbourhood Group*
 - *Brant Avenue Neighbourhood Group*
 - *Waverley Neighbourhood Group*
 - *Parkwood Gardens Neighbourhood Group*
 - *Kortright Hills Community Association*
 - *Clairfields Neighbourhood Group*
 - *West Willow Woods Neighbourhood Group*

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8.12. Local Companies in Sustainability Businesses

The following are businesses that have a direct strategic interest in energy and water productivity. In some case, their activities support efforts to improve productivity, in others they feature as major energy users, and yet others are on this list because of the impact of their products or services on energy or water use.

Wyckomar Inc.

- Business type: Manufacturer
- Product types: Water filtering and purification systems, water filtering and purification system components, UV water sterilization equipment.
- Address: Box 611, 111 Malcolm Rd. Unit 1, Guelph, Ontario Canada N1H 6L3
- Phone: +1-519-822-1886 Fax: +1-519-763-6580

Solar Converters Inc.

- Business type: Manufacturer
- Product types: Charge Controllers with Maximum Power Point Tracking(R) with Voltage Conversions, Linear Current Boosters, DC-DC Converters, DC Autotransformers, Battery Equalizers, DC Pump Controllers (PV and Battery Driven), Voltage Controlled Switches, Cathodic Protection Controllers, Constant Voltage Regulators, Load Diversion Controllers, Battery Desulphators, Fuel Cell Controllers, Generator Starters, Lighting Controllers, Load Controllers, Voltage Alarms, etc..
- Address: 558 Massey Road, Unit 1, Guelph, Ontario Canada N1K 1B4
- Phone: +1-519-824-5272 Fax: +1-519-823-0325
- Web Site: <http://www.solarconverters.com>

Danby Products Ltd.

- Business type: Manufacturer
- Product types: Compact and Logo Refrigerators, Mid-Size Refrigerators, Freezers, Microwaves, Dishwashers, Specialty & Energy Efficient Appliances Types: Danby, Danby Designer, Danby Diplomat, Danby Millennium, Simplicity.
- Address: 5070 Whitelaw Road, Guelph, Ontario Canada N1H 6Z9
- Phone: +1-519-837-0920 Fax: +1-519-837-0449

Eden Energy Equipment

- Business type: Distributor
- Product types: Geothermal energy systems, geothermal energy system components, WaterFurnace distributor.
- Address: 71 Wyndham St. S., Guelph, Ontario Canada N1E 5R3
- Phone: +1-519-821-8478 Fax: +1-519-821-8491

Doug Finlay Consultant

- Business: Consultant
- Product: Negotiation & acquisition consultancy in the Wind Energy Industry.
- Address: 549 Watson Pkwy. S., Guelph, ON, N1L 1C4
- Phone: +1-519-766-4000

Invenergy Wind Canada LLC

- Business: Energy Service Company

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- Product: Long-term ownership and operation of utility scale wind projects ranging in size from 27 to 300 MW. The Company has approximately 25 projects in active development in North America, totaling more than 2,500 MW of new wind energy generation.
- Address: 45 Toronto Street, Guelph, ON, N1E 3E3
- Phone: +1-519-767-4441
- gpundsack@invenergyllc.com
- <http://www.invenergyllc.com>

Stantec Consulting Ltd.

- Business: Consultancy
- Product: Management and Due Diligence Consulting, Project Development, Engineering, Project & Construction Management, Commissioning & Start-Up, Operations and Maintenance Engineering, Transmission & Distribution, Environmental Studies & Regulatory Permitting and Approvals.
- Address: 361 Southgate Drive, Guelph, ON N1G 3M5
- Phone: +1-519-836-6050
- pprier@stantec.com
- <http://www.stantec.com>

FireFly Energy

- Business: Manufacturer
- Products: Advanced battery systems
- Address: 45 Speedvale Avenue East, Guelph, ON, N1H 1J2
- Phone: 1-519-780-5230 Fax: 1-519-780-5234

Canadian Consortium Of Clean Energy & Environmental Technologies Inc

- Business: Consulting
- Product: Energy conservation
- Address: Technology Centre Building, 24 Corporate Court, Guelph, Ontario, N1G 5G5

Agviro Inc

- Business: Consulting and engineering
- Products: Environmental audits, engineering representing the energy needs of the member of the agricultural community
- Address: 367 Gordon St., Guelph, ON, Canada, N1G 1X8
- Phone: +1-519-836-9727 Fax: +1-519-836-5708
- general@agviro.com

The Renewable Planet

- Business: Information Service (Free)
- Product: Environmental projects data base
- Address: 503 Imperial Road North, Guelph, Ontario, Canada, N1H 6T9
- Phone: +1-519-837-4436 Fax: +1-519-837-1288

Energy Source Canada Inc.

- Business: Natural Gas Marketer
- Address: 102-75 Farquhar St., Guelph, ON, Canada, N1H 3N4
- Phone: +1-519-826-0777 Fax: +1-519-837-0006

Sky Generation Inc.

- Business: Energy Service Company
- Product: Private company to build, own, and operate wind turbines in Ontario
- Address: PO Box 1064, 191 Isthmus Bay Road, Lion's Head, ON N0H 1W0

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- Phone: +1-519-793-6212 Fax: +1-519-836-1914
- www.skygeneration.ca/

Greenhous Gas Measurement.com

- Business: Consulting
- Product: Life Cycle Assessment (cradle to grave) of technologies and processes.
- 154 Glasgow Street, Guelph, ON N1H 4W8
- Phone: +1-519-822-1660
- sby@ghgm.comGHGm.com

8.13. Real-estate Developers, Architects and Planners

Thomasfield Homes has built a solar home in the Pine Ridge Subdivision and marketed a solar package to buyers. Thomasfield also undertook an Affordability and Choice (ACT) project in the Pine Ridge Subdivision with innovative zipper lots, corner lots and a granny flat that increased densities, had specially designed live/work units, and took advantage of passive solar energy. Throughout the Southend of Guelph there is a system of greenways in Pine Ridge, Westminster Woods, and Clairfields that clean and infiltrate storm-water and also link the communities through walkways. Local developers have been asked to lecture to Ministry of the Environment employees annually regarding these innovative greenways. Local builders including Reid's Heritage Homes and Terra View Homes are Energy Star Builders

Given the overall importance of the built environment to both the current energy use, and the future success of the CEP, a rigorous data base of builders, architects and developers committed to offering energy and water efficient new buildings, renovations and scale developments needs to be developed.

This is suggested as an immediate and ongoing task for the Guelph Development Association, and Guelph and District Homebuilders Association.

8.14. Other Public Interest Programs and Successes

- **Project Porchlight:** A campaign to distribute Compact Fluorescent Light bulbs (CFL) one by one to citizens of the city, originally started in Ottawa and has come to Guelph. This initiative has prompted many people to expand their use of CFLs. <http://www.onechange.org/>
- **Solar groups:** Two community groups currently pursuing the prospect of establishing solar electricity generation in Guelph. One group, GRASP (Guelph Residents Advocating Solar Power), is hoping to bring enough households together that a group purchase of solar generation can lower cost. The second group, Sunpark Energy Corp of Rockwood, is challenging citizens anywhere to purchase a solar cell for \$25. to be part of a Sunpark to be built at sites across the country.⁸⁰

8.15. OMAF Cogeneration Installations

The Ontario Ministry of Agriculture and Food has its main offices at 1 Stone Road in Guelph. 1 Stone Road and two other Ontario Realty Corporation buildings in the vicinity are in the process

⁸⁰ Sunpark Challenge, <http://www.sunpark.ca/index.html>

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of installing co-generation equipment within each building. These could have the potential to be integrated into a neighbourhood system.

8.16. University of Guelph Central Steam System

The UoG has a campus wide steam system with four central boilers providing up to 200,000 lb/hr of steam in the winter, and as little as 30,000 lb/hr in summer. The system has the potential to be upgraded, made more flexible in terms of services offered, and potentially to become a part of a future neighborhood system.

8.17. Renewable Fuels

Guelph's commitment to developing a well structured community energy plan has resulted in a high level of interest from a number of entrepreneurs interested in establishing renewable fuels-based businesses. These include ethanol and biodiesel as transportation fuels, waste-to-energy conversion and wood-pellets as heating fuel. None are yet at a stage for listing as part of the CEP Assets. However, the high level of interest is a testament to the impact of the plan.

8.18. Sources for Funding and Intellectual Support

Many financial and non-financial public interest sources exist to support the implementation of the Community Energy Plan. It is proposed that an appendix or separate document be created in conjunction with the Consortium over the coming months, as the specific priorities and programmes arising from the CEP become clearer. Agency programs need to be researched and clearly understood. Where appropriate they can be aligned with the CEP to achieve its goals and targets. Some such agencies are:

- Ontario Centres of Excellence
- Ontario Power Authority
- Conservation Foundation Funding
- National Science & Engineering Research Corporation
- Natural Resources Canada
- Environment Canada
- Federation of Canadian Municipalities
- Ontario Ministry of Transport
- Pew Center for Climate Research
- Private Trusts
- Socially Responsible Investors

This list should not limit the efforts of the CEP to seek out and obtain funding partnerships from a vast number of sources in the government, public, and private sectors. Given the global concern over climate change, some non-Canadian sources should not be overlooked.

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9. SUSTAINABLE ENERGY GOALS AND MEASUREMENTS

9.1. Background

The goals of the Community Energy Plan selected by the Consortium, and their associated benefits were outlined in Section 4. One of the criteria was that these should be easily measurable with readily available data. This section summarizes the recommended measurements.

Some will be in areas such as Economic Development, where there will need to be alignment between the measures to avoid overlap, duplication or confusion. Where this is the case, this is highlighted.

9.2. Goal 1 - Attracting Investment

<i>Guelph will be the place to invest, supported by its commitment to a sustainable energy future</i>	
Measures of success	Units
Inbound direct investment in all sectors	<ul style="list-style-type: none"> • \$ invested • Year-on-year % increase compared to Canadian average • Narratives where the final decision was specifically based on Guelph's energy offerings
Employment created	<ul style="list-style-type: none"> • Number of new jobs
Employment in energy related services and industries	<ul style="list-style-type: none"> • Total number of jobs • Year-on-year % increase

This goal underlines the growing strategic importance of energy as a factor in decision making by industrial, and occasionally, commercial investors. Clearly, energy is only one factor in attracting new inbound investment to the city. The final measure and units that will be used should be completely aligned with those used to track economic development in general.

In the event that Guelph's unique approach to energy became the deciding factor, this should be captured in narrative form for use to attract further investors with the same needs, and for wider communication of the success of the CEP.

This goal also underlines the potential for creating businesses clustered around a successful implementation of the CEP. This aspect of the goal will be measured over time by the number of people gainfully employed in the energy services, alternative energy and associated sectors.

The City and the Guelph Chamber of Commerce should supply 2006 benchmarks as an immediate task towards CEP implementation. The assumptions should be well documented to ensure consistent future comparisons.

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9.3. Goal 2 Competitive Reliable Services

<i>Guelph will have a variety of reliable, competitive energy, water, and transport services available to all</i>	
Measures of success	Units
Residential services	<ul style="list-style-type: none"> • Average \$ cost per capita for all residential energy services – gas, electricity, oil, and district heating (future) • Average \$ cost per capita for all residential water services • % difference to Canadian averages
Commercial/Institutional services	<ul style="list-style-type: none"> • Average \$ cost per square meter of Grade A commercial property for normal energy and water services - lighting, heating, air conditioning, domestic hot water • % difference from Canadian average
Industrial services	<ul style="list-style-type: none"> • Average \$ cost per kWh electricity • Average cost per GJ natural gas • % difference to Canadian averages for above two • Average \$ cost per GJ heat (if supplied) • Average \$ cost per GJ steam (if supplied) • % difference to normal on-site practice for above two
Individual transportation	<ul style="list-style-type: none"> • % of total passenger kilometers using communal transit • Consortium should agree to a measurement for the effectiveness of strategies to encourage use of bicycles and walking
Commercial transportation	<ul style="list-style-type: none"> • Recommendation is to wait until a later stage of the implementation of the CEP before selecting a set of measurements
Interruptions	<ul style="list-style-type: none"> • Duration • Number of events

This will be an area where measurements are likely to evolve. However it is also where it is better to be directionally correct rather than strive for precision.

In the case of residential services the focus is on the average individual total cost. In the case of commercial and institutional, the focus is on the average cost per square meter. Industrial services are hard to bundle as indexed costs using external data, so unit cost is used.

In all cases, the measures should reflect both traditional and non-traditional supplies of energy services including (but not limited to):

- Electricity via grids
- Electricity from on-site fossil fuel generation
- Electricity from on-site renewable generation
- Natural gas
- Heat from district heating networks

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- Heat from on-site cogeneration
- Steam from district steam networks
- Steam from on-site cogeneration
- Heat and/or steam from on-site bio-mass boilers or solar collectors
- Cooling from district cooling networks
- Water/waste water via grids
- Water/waste water from grey and black-water systems

The measurement recommendations will be relatively easy to capture as long as most energy and water services are supplied to end-users via public energy services. The situation will develop new complexity as more distributed, on-site and alternative technology solutions are deployed.

The individual fuel-driven transportation measure is defined essentially as a market share of individually owned vehicle journeys against communally owned vehicle journeys. This measure would lump passenger kilometers from programs such as AutoShare⁸¹ or Green Wheels/StattAuto⁸² into the communal category.

Commercial transportation is a complex multi-dimensional category and the recommendation is not to have a systematic measure at this time. As a point of data, commercial transportation accounts for about 12% of all Canada's energy use, a significant, but not overwhelming percentage of the total.

9.4. Goal 3 Environmental Performance

<i>Guelph energy use per capita and resulting greenhouse gas emissions will be less than the current global average</i>	
Measures of success	Units
Energy use per capita <i>2005 Estimate</i> <i>74 versus 14</i>	<ul style="list-style-type: none"> • Total energy of all types delivered to all users in a year expressed in megawatt hours equivalent divided by the current census population of the city • Ratio to total global energy use per capita as defined by the EIA⁸³ to the equivalent for Guelph
Resulting greenhouse gas caused per capita <i>2005 Estimate</i> <i>15 versus 4</i>	<ul style="list-style-type: none"> • Greenhouse gas caused per year as defined by the emissions factors for all primary fuels used by the city expressed in Tonnes carbon-dioxide equivalent divided by the current census population of the city • Ratio of total global greenhouse per capita as defined by the EIA⁸⁴ to the equivalent for Guelph

This is a set of measurements that could become very complex very quickly, if all the second-order factors are included. The recommendation is to stay with very straightforward measures

⁸¹ <http://www.autoshare.com/>

⁸² <http://www.greenwheels.de/>

⁸³ World Primary Energy Consumption by Region, 1995-2004 <http://www.eia.doe.gov/emeu/aer/txt/stb1103.xls>

⁸⁴ World Carbon Dioxide Emissions From Energy Consumption, 1995- 2004
<http://www.eia.doe.gov/emeu/aer/txt/stb1119.xls>

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for the time being which are directionally valuable, even if they can be challenged on a detailed basis.

The measure of energy use per capita in the city will always be on the basis of the primary fuel used to create the service. So in the case of electricity this will include the conversion, transmission and distribution losses which occur outside the city. The table used for the global comparison from the EIA is on this basis.

Greenhouse gas will be calculated using the emissions factors assigned by Environment Canada in support of Canada's obligations under the Kyoto Treaty.

9.5. Goal 4 National Comparison

<i>Guelph will use less energy and water per capita than comparable Canadian cities</i>	
Measures of success	Units
Energy use per capita	<ul style="list-style-type: none"> Ratio of Guelph's energy use per capita as defined in Goal 3 relative to one comparable city in Ontario and one in British Columbia or Quebec
Resulting greenhouse caused per capita	<ul style="list-style-type: none"> Ratio of Guelph's greenhouse as creation per capita as defined in Goal 3 relative to the same two cities

This is a key measure of energy performance relative to a couple of benchmark cities that would either be a potential national champion and/or a competitor for inbound investment. The choice of benchmark cities is at the discretion of the Consortium. One in Ontario is recommended to have a comparable climatic benchmark. The other Canadian city should be selected on the basis of being a potential competitor for inbound investment, especially in high-tech areas, and will also be very challenging environmentally due to climate difference and the high percentage of hydro electricity.

9.6. Goal 5 Public Investments

<i>All publicly funded investments will visibly contribute to meeting the four CEP goals</i>	
Measures of success	Units
New construction	<ul style="list-style-type: none"> All new facilities owned or leased by tax funded entities or Crown Corporations will meet or exceed the prevailing energy efficiency, climate performance and water efficiency guidelines in place under the CEP
Major renovation	<ul style="list-style-type: none"> All major renovations of facilities owned or leased by tax funded entities or Crown Corporations will meet or exceed the prevailing energy efficiency, climate performance and water efficiency guidelines in place under the CEP
Vehicles	<ul style="list-style-type: none"> All vehicles acquired by tax funded entities or Crown Corporations will be at least 10% more fuel and greenhouse gas efficient than the prevailing European Union average – based on current indications

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The responsibility of public authorities to be seen as fully engaged with the goals of the CEP cannot be overestimated. Many programs in the EU, now seen as part of the “normal” way of doing things, were triggered by public authorities acting as the lead.

The choice of the European Union average is a convenient, well documented stake in the ground which is relatively easy to achieve with careful vehicle choice. It is also likely to remain the global best practice for at least one full vehicle design generation (approximately 12 years).

9.7. Communicating Community Energy Plan Performance

Section 10 “Overall Energy and Water Strategy” will cover overall communications surrounding the recommended Community Energy Plan Strategy. However, it is appropriate to underline in this section on Community Energy Plan Goals and measurements, the need for regular, transparent reports of the city’s progress against its goals.

The recommendation is that all the agreed measurements for the four primary goals are regularly available to all Guelph’s citizens in both detailed form and in the form of a Community Energy Dashboard. The reporting interval will be determined by the final availability of data. The recommendation is that the CEP Dashboard should be updated at least two times a year with data no more than six months old.

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10. SUCCESSFUL COMMUNITY ENERGY PLANS

10.1. Benchmarking Community Energy Plans

There is a widespread interest in integrated Community Energy Planning in Canada. This reflects the recognition that the challenges outlined in Section 3 of this Plan need concerted approaches at the community level. However, most plans fail to meet their targeted outcomes. The Guelph CEP Consortium recognized this risk and sought out benchmark communities from around the world that had clearly achieved a satisfactory combination of the following outcomes:

- Reliable, economic energy services tailored to needs of various consumers
- High levels of energy efficiency including transport
- Low greenhouse gas creation
- Flexibility to incorporate new fuels, both renewable and fossil
- Flexibility to incorporate new technologies
- Marketing energy and water productivity expertise beyond their administrative borders

Two specific cities were reviewed, Copenhagen in Denmark, and Mannheim in Germany. Both, like Guelph, are in climates that demand more heating than cooling. Both, like Canada, are liberal democracies with a high standard of living. Their energy approach will be briefly described.

10.2. Community Energy Approach - Copenhagen

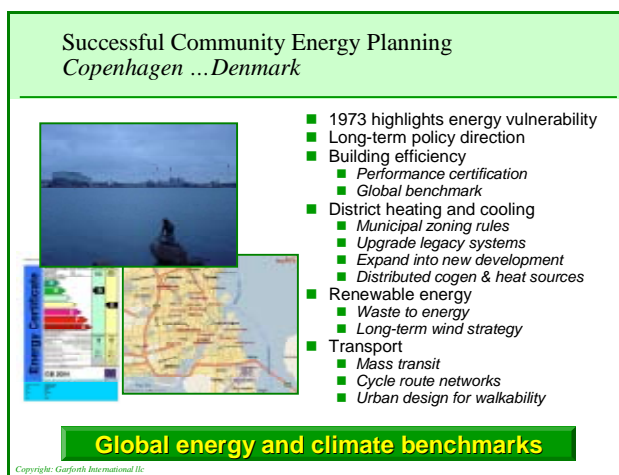


Figure 10.1 Overview of Copenhagen Energy Approach⁸⁵

During the 1973 events that led to dramatic increases in oil prices and fears of supply interruption, Copenhagen was particularly vulnerable since its electricity was mostly oil-generated. The city embarked on a conscious path to minimize its energy vulnerability. The most striking feature has been the overall policy and implementation consistency over many decades. The city boasts some of the most efficient building practice in the world, and has been a pioneer in establishing approaches to guarantee and maintain the energy performance of buildings. Building efficiency performance standards are regularly reviewed and upgraded, typically once every five years.

⁸⁵ Slide from presentation used by Consortium in CEP input meetings during 2006 –source GIL and various

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At the start of the planning, the city core had a communal system for delivering heating. Instead of this being closed down as has been the case in many US and Canadian cities, it was seen for the asset it was, and has been systematically upgraded and widened to cover most of the city and many of the new and remodeled suburbs. Having a thermal network to deliver space heating and domestic hot water allows vast amounts of heat traditionally wasted in the generation of electricity to be used. Most of the city's buildings and homes are served in this way. Over time, the city has become effectively zoned for heating.

A thermal network also facilitates the connection of multiple energy sources into a convenient, efficient system. The city uses a range of fuels for heat and electricity generation including coal, natural gas, oil, combustible municipal waste, wood chips, solar sources and wind. The availability of a thermal network also facilitates the optimum economic use of boilers, generators and other energy conversion equipment across the city. To further make use of the available heat from a wide range of sources, especially during the summer, district cooling is being added to the network⁸⁶.

As the city grew and redeveloped, conscious decision making processes were put in place to minimize the use of personal cars and to maximize the use of walking, mass transit and bicycles. The details are many and all relatively well documented in many descriptions of urban planning principles. They include creating more mixed use areas, densification of dwelling and activities, streetscape design for visual and social interest, traffic calming measures, mass transit priorities and investments, and integration of green spaces into the core urban design. Copenhagen has also been a pioneer in shared use bicycles and cars. Incidentally, these urban design concepts also help create more energy efficient buildings and improve the economics of thermal energy distribution.

The community energy system is run by a consortium of neighborhood multi-utility cooperatives bound together by mutual cooperation agreements and a common dispatching system with common technical standards.

In recent years, there has been an increasing focus on rainwater recovery and reuse systems, combined the increasing deployment of so-called grey-water systems, to reuse a portion of domestic water use for non-potable applications. The main driver of this is less to conserve water in an absolute sense, but more to reduce the energy and chemicals use in water processing and transportation.

In addition to creating a highly efficient community energy system, Copenhagen and its surroundings have become a recognized center for efficient architecture, construction technologies and consulting.

The average Dane uses 64% less energy than the average Canadian, and, despite the high portion of hydro-electricity in Canada, the average Dane still produces 58% less carbon dioxide than their Canadian counterpart.⁸⁷

⁸⁶ Heat is converted to cooling using absorption cooling technology. Many references on this are widely available.

⁸⁷ IEA Key World Energy Statistics 2006

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10.3. Community Energy Approach of Mannheim

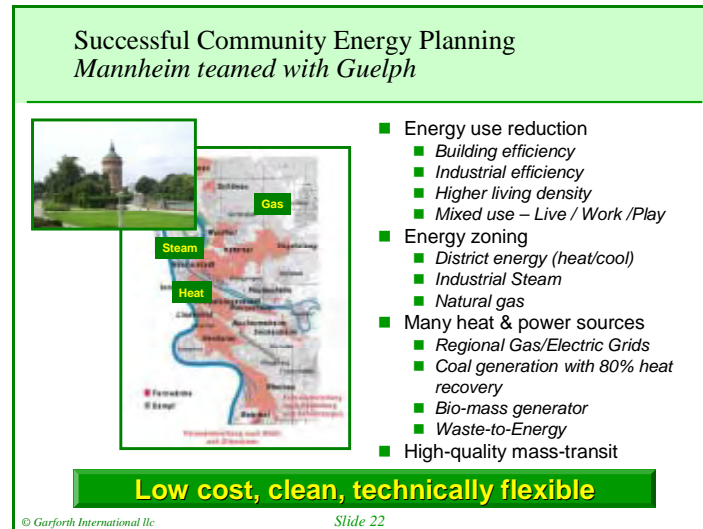


Figure 10.2 Overview of Mannheim Energy Approach⁸⁸

Like many industrialized German cities, Mannheim was heavily damaged in World War II. In the immediate post-war period, existing infrastructure, including a pre-existing district heating system and tramway system were put back into service. In the late sixties and early seventies, the combination of declining quality of domestic coal, dependency on Soviet gas and oil and Middle East oil, combined with the demands of a booming economy, put a high premium on effective use of energy.

The resulting Mannheim energy infrastructure has many similarities to Copenhagen. Homes and buildings are efficiently constructed and managed, against building performance codes that are regularly updated.

Like Copenhagen, the strategic decision was made in the 1980's to upgrade and extend the district heating system, and it now extends across wide areas of the city (see the red shaded areas in the map above) serving the majority of both residential and commercial users with heating and domestic hot water. Again, like Copenhagen, district cooling is being added to serve the downtown business district and selected specific sites, including the new SAP Arena.

A specific feature of the Mannheim structure is the creation of an industrial enterprise zone on an island in the Rhine River that has tailored energy supply which includes industrial grade steam as a community utility, in addition to supplying district heating, gas and electricity. This has attracted investors with specific process steam needs, since they avoid significant capital and operating costs.

The thermal and electric network facilitates the inclusion of multiple fuel and technology options. The bulk of the heat is sourced from large scale coal generation located very close to the city, supplemented by natural gas, combustible municipal waste, recycled lumber from building demolition, and some solar sources.

⁸⁸ Slide from presentation used by Consortium in CEP input meetings during 2006 –source GIL and MVV

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A good example of how a flexible system such as Mannheim or Copenhagen can incorporate new technologies is the way Mannheim is piloting a trial of appliance-sized micro cogeneration units that fit into individual homes and act as both electricity generators and heat sources.⁸⁹ If successful, this could put thousands of electricity and heat generators into the overall community system, owned and operated by the city utility.

Being a predominantly 17th century city, the core of Mannheim is essentially designed along “New Urbanism” principles, and is naturally oriented more to walking, biking and mass transit. The tramway system has been radically updated in the past 15 years, and is served by frequent, air-conditioned light rail infrastructure. In parallel with upgrading the mass-transit, the city has discouraged car use in the downtown through conveniently located central parking near to mass transit, along with large areas off limits to cars.

Unlike Copenhagen, the energy (electricity, gas, district heating, district cooling etc), water and transportation supply system is run by a single municipal entity. This entity is a private corporation, majority owned by the city, with minority participation via the stock exchange.

The utility, MVV Energie AG, has developed a world-wide consulting and engineering practice based on its expertise from its operations in Mannheim, and recently other cities in Germany and Poland.

The average German uses 59% less energy than the average Canadian, and, despite the high portion of hydro-electricity in Canada, the average German still produces 55% less carbon dioxide than their Canadian counterpart.⁹⁰

10.4. Community Energy Examples from North America

Mannheim and Copenhagen were chosen as examples of the results when efficiency, flexible distribution and efficient fuel use are combined in an entire city. There are no real parallels in North America. However, there are indicative examples that are relevant:

10.4.1. California Building Efficiency

California has had a systematic approach to reviewing, measuring and upgrading building efficiencies over a number of decades⁹¹. This systematic approach has resulted in buildings that are on average between 30 to 40% more efficient than the rest of the USA and the average will continue to increase as the 2005 version impacts the overall building stock. The new Ontario Code⁹² will approach these levels of efficiency.

10.4.2. Markham District Energy

Since 2002, Markham has installed a new small community owned heating and cooling⁹³ cogeneration system supplying about 400 hectares of the downtown core. The ultimate goal is to connect 25,000 residents and 17,000 employees with this system. It is municipally owned, and operates in parallel with the local electric utility. Like all district

⁸⁹ See Appendix 1 for the Mannheim press release on this initiative – also see www.whispergen.com

⁹⁰ IEA Key World Energy Statistics 2006

⁹¹ See California Energy Commission Title 24 <http://www.energy.ca.gov/title24/>

⁹² See http://www.mah.gov.on.ca/userfiles/HTML/nts_1_27483_1.html

⁹³ See www.markhamdistrictenergy.com

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energy systems, it has the flexibility to be expanded as the need or opportunity arises and to incorporate alternative fuels.

10.4.3. Austin District Energy

Austin Energy⁹⁴ installed its first electric-driven district cooling system, serving part of the downtown, and will soon be expanded to a second phase. This system serves commercial and multi-family residential customers. They also operate a district energy system in a light industrial park supplying electricity, steam, heating, cooling and compressed air. Austin Energy is a regulated electric utility owned by the City of Austin, also supplying value-added services including district energy via its deregulated business unit.

10.4.4. Dockside Green – Victoria

This is a planned 6 hectare brownfield development⁹⁵ in the City of Victoria, and has set the overall goal to be a model of efficiency and sustainability⁹⁶. The scope includes super-efficient buildings, 55% better than the Canadian Model National Energy Code⁹⁷, combined with efficient appliances, solar electricity, efficient water management systems and biomass district heating.

Other comparable small and medium scale examples exist, all of which point to the elements that are integrated into the following strategy for Guelph. Guelph is unique in Canada at present in that it is setting a Vision, Goals and long term community commitment to deliver breakthrough energy and water outcomes for the entire city. For that reason, the benchmarking focused very much on the entire city models such as Copenhagen and Mannheim.

⁹⁴ See <http://www.austinenergy.com/Commercial/Other%20Services/On-Site%20Energy%20Systems/districtcooling.htm>

⁹⁵ See http://www.docksidegreen.ca/dockside_green/overview/index.php

⁹⁶ GIL, consultant to the project, is also developing scale project energy plans for similar developments in South Carolina, California and Tennessee. Details are available on request

⁹⁷ See <http://oee.nrcan.gc.ca/commercial/financial-assistance/new-buildings/mneeb.cfm?attr=20>

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11. GUELPH ENERGY AND WATER STRATEGY

11.1. Framework for Guelph Community Energy Plan

Following formal acceptance of the Community Energy Plan by the Consortium and the City Council, Guelph will commit to a multi-decade implementation of an energy and water strategy that will clearly drive the entire city towards the vision and goals outlined in Sections 5 and 9 of the Plan. This will be a broad based commitment of all major constituents within the city, with the support from all sides of the political spectrum. Progress will be reported on a systematic basis and corrective actions taken if there is insufficient progress to the goals.

The common feature of all the benchmarking examples used above is that the activities are assessed in the following priorities. All significant public investments in Guelph will be challenged to respond to the following questions where applicable:

1. Have all reasonable measures been taken to maximize the energy and water efficiency in buildings, transportation and industry?

This underlines the obvious fact that the cleanest and ultimately cheapest energy source is the energy that is not used through efficiency.

2. Have all reasonable measures been taken to implement combined heat and power (CHP) solutions?

To fundamentally change the efficiency of electricity generation from its present 30 to 40% range to levels approaching 70 to 90%, significant amounts of combined heat and power are a pre-requisite.

3. Have all reasonable measures been taken to incorporate renewable energy sources, including renewable transport fuels, or to ensure they can be incorporated in the future?

In addition to reducing the greenhouse gas footprint through efficiency and CHP, the next level of greenhouse reduction and fuel flexibility must come from renewable sources. In many cases, these will be future options as costs and technology become competitive; however, systems should be designed to accommodate them.

4. Have productive teaming relationships been established with the existing electricity and natural gas networks to supply the remaining energy needs for Guelph?

This addresses eliminating the ultimately non-value added risk of competition between existing traditional energy supply structures and the reworked energy structure of Guelph. The intent is to ensure all the energy needs addressed in the CEP and the systems that supply them are operated at optimum returns and technical performance. Further investigation needs to be taken into possible jurisdictional and/or provincial issues.

This priority is a well documented, but rarely implemented, approach to achieving breakthrough energy goals. It is the basis of European Union and Californian energy policies, and is called the "Trias Energetica" or "California Loading Order" respectively.

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The following strategy for the City will address each of these priorities in turn, with recommendations.

11.2. Maximizing Efficiency of Homes and Buildings

They are a major source of greenhouse gases, especially when the carbon associated with their electricity use is included.

The estimated total energy cost to the homes and buildings consumers today is \$150 to \$200M, which could easily double within the next two decades. Managing this cost on the city will be a key element of affordability and competitiveness.

A major challenge in all strategies is to reconcile the energy performance anticipated from a building constructed according to any particular Code, and the actual buildings. The latter number is usually somewhat higher⁹⁸. The CEP strategy will recommend an approach to reconcile this systemic discrepancy for both commercial and residential construction.

11.3. Residential Developments – Efficiency Expectations and Guidelines

Target – Use efficiency to create at least all the energy needs to support the growth of the residential sector

Guelph is entering a growth phase where at least 21,000 homes will be added in the next 25 years, potentially adding 650 GWh_e annual energy consumption per year from today's total of about 1,610 GWh_e/yr assuming today's code levels.⁹⁹

During the same time approximately 3 million square meters of residential property will be renovated, presenting opportunities for substantial efficiency upgrades.

The following strategies are recommended

1. Provide incentive programs to accelerate meeting the efficiency standards of the new Ontario Building Code 2006 scheduled to be fully in force by the end of 2012 starting in 2007. According to the *Backgrounder* news release¹⁰⁰ where estimated incremental costs were tracked progressing from the current code to the 2012 code, the estimated construction cost impact on a 200 m² home is expected to be within the range of \$8,600 and \$9,300. The expectation is that about one-third of this can be absorbed in market pricing and two-thirds in avoided long-term investments in the energy supply systems. The energy service supplier can reflect this latter value either in reduced tariffs or avoided plant costs for the builder.
2. Implement a sustained efficiency improvement of 1.5% per year for ongoing new construction from 2012 to 2031. This would bring the average energy use to about 175 kWh_e/m², a level comparable with Sweden today.

⁹⁸ Owens Corning estimates this at about 20% non-compliance based on a mix of US and Canadian experience.

⁹⁹ 650 GWh_e/yr based on linearly adding 21,500 homes from 2007 to 2031 with average area of 150 m² and average estimated energy use of current new construction estimate of 250 kWh_e/m²

¹⁰⁰ *Backgrounder* news release entitled "Energy Efficiency in the 2006 Building Code" published by the Ministry of Municipal Affairs and Housing, the Province of Ontario. *Backgrounder* footnote: "Figures are based on a typical 2000 square foot gas-heated house in the Greater Toronto Area."

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3. All major renovations will be expected to achieve at least a 25% energy efficiency increase from today's overall city-wide average of 309 kWh_e/m²/yr starting from 2007. In subsequent years, this level will be improved by a net 3% per year through at least 2031. By 2031, the average efficiency of renovated properties would be about half the average of today's city wide average.
4. The city will set the expectation that all residential construction (new and major renovation) will have Energy Performance Certification similar to the EP labelling initiative required by the latest "Energy Performance of Buildings" Directive in Europe. This will achieve a "compliance premium" conservatively estimated to be about a 5% additional improvement in overall energy efficiency. *See full discussion in Paragraph 11.5 below.*
5. For residential developments where the property is greater than 30 acres in area, the proposed density is greater than 40 units per acre, or the anticipated demand for energy will be greater than 30 MW per K², the expectation is that there will be an assessment of the viability of distributed cogeneration, distributed renewable heat or electricity generation, or heat pumps. If the development is in one of the Scale Projects targeted for district energy (heating or cooling) the assessment should include an evaluation of this energy supply option.

Collectively these guidelines would have the effect of absorbing all the growth and additionally delivering a net reduction in residential energy use of 120 GWh_e from today's total.

11.4. Commercial and Institutional Buildings

Target – Use efficiency to create all the energy needs to support the growth of the commercial and institutional sectors

To support the population growth of about 65,000 people and their associated employment, shopping, and recreation, the commercial and institutional space is likely to grow by about 475,000 m² from its present estimated 1,683,916 m²¹⁰¹, potentially adding at least 303 GWh_e/yr energy consumption to the present 1,046 GWh_e/yr by 2031. Over the same period, half of the same area of commercial and institutional space will be renovated.

Similar expectations as for residential would be put in place:

1. Encourage the accelerated implementation of Ontario Building Code 2006 to full level by 2007, and expect a 1.5% per year improvement from 2012 onwards through educational and other incentives.
2. Major renovations should achieve a 25% improvement from above city average of 621 kWh_e/m²/yr from 2007, followed by a 3% year-on-year net improvement through 2031
3. All new commercial and institutional buildings and major renovations are recommended to have an EP Label.
4. Collectively these guidelines will have the effect of absorbing all the growth in the commercial sector to within 5% of today's total energy use levels.

¹⁰¹ Estimate based on CN Watson Development Charges Nov 2003 adapted by actual 2005 energy deliveries

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5. For Commercial developments where the total constructed area exceeds about a 10,000 m², the expectation is that there will be an assessment of the viability of distributed cogeneration, distributed renewable heat or electricity generation, or heat pumps. If the development is in one of the Scale Projects targeted for district energy (heating or cooling) the assessment should include an evaluation of this energy supply option.

11.5. Energy Performance Labelling of Buildings

Target - Adopt an energy performance labelling scheme for buildings as a voluntary initiative for the City, teamed with Natural Resources Canada and a local mortgage bank, to act as a pilot for the whole of Canada to gain about 5% incremental delivered efficiency

Canada, like many jurisdictions, is awakening to the fact that the energy performance of buildings as delivered is often significantly lower than should be the case according to prevailing codes. The European Union is tackling this issue with the Energy Performance Labelling requirement spelled out in the 2002 Energy Performance of Buildings Directive.

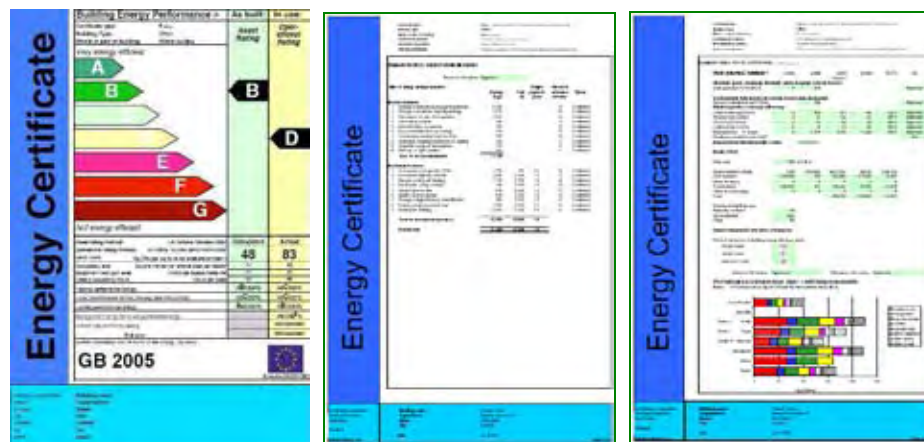


Figure 11.1 Sample EU Energy Performance Label

(See Appendix 9 for more information)

The basic principles of the labelling process are:

- Applies to all homes and buildings over 50 square meters
- Available to buyer or tenant when sold or rented
- Include both energy and greenhouse gas indicators
- Should reflect the current state of the building, whether new or existing
- Excludes historic and similar structures if appropriate
- Prominently displayed in public buildings
- Based on “Asset” (calculated) rating for new buildings
- Based on “Operational (as used) for existing buildings
- Independent inspectors certify the buildings
- The labels are a simple three page document

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1. Comparison with building peer group or code
2. Measures and estimate costs to improve performance going forward
3. The methodology used to derive the performance indexes

The goal is to move to a market expectation that the energy performance of a building will be transparent, such that the buyer can reasonably anticipate costs and performance.

The EU-wide label that is being adopted is based on a pattern already familiar to most people in the Union from appliance labelling. Natural Resources Canada is leading a national process to recommend a labelling format, implementation process and legal framework. The form will probably be similar to existing Energuide labelling. The process is expected to be based on the EU experiences.¹⁰² NRCAN has expressed an interest in exploring a city wide pilot with Guelph. Owens Corning is also expressing an interest to participate in a pilot scheme.¹⁰³

This is an area where the Guelph Development Association, the City Planning Department, the University of Guelph and the Conestoga Community College should form a small group to develop the details of implementing an effective, visible and low cost EP labelling scheme.

Other than a mandatory approach, experience from other jurisdictions indicates that the mechanisms likely to encourage labelling are:

- Some form of risk sharing for the energy performance guarantees, either with a commercial sponsor and/or public agency
- Influential early adopters from the construction community forcing a competitive reaction
- Team with financial institutions to make EP Labeling a visible and strongly recommended part of the financing process.
- Initially require EP Labelling in selected Scale Projects (see below) developments rather than the entire community

All of these should be explored by the CEP Committee.

An effective labelling scheme provides the basis for a number of possible market mechanisms:

- Public awareness of the climate impact of homes and buildings – this is a link that is often not fully appreciated and the label helps make this more transparent.
- Provides a base for future market mechanisms
 - Differential property taxes
 - Accelerated planning approval
 - Differential mortgage costs
 - Rental negotiation
 - Price negotiation
- Builder / developer credibility
 - Opportunity for good builders to promote their excellence
 - Could be a future basis for rectification or recourse

¹⁰² Garforth was keynote speaker at NRCAN “Building Energy Labelling Forum” – Dec 2006. and discussed the potential teaming with the Guelph CEP

¹⁰³ Private communication with Peter Garforth – December 2006

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- Building owner peer pressure
 - Visible public labelling
 - Who wants a poorly rated (“F”) building?

Public operators of buildings should follow the lead of Guelph Hydro and label their buildings as visible statements around this aspect of the CEP. The labelling should be done irrespective of whether the Energy and Climate Performance is “good” or “bad”.

11.6. Maximizing Quality and Efficiency of Industrial Development

Target: - Add to Guelph’s attractiveness for quality industrial investment by offering world class tailored energy services and achieve annual investment growth rates higher than the underlying population growth, with no overall increase of the primary energy needed to serve the first fifteen years of growth.

Due to its proximity to transportation and markets, Guelph is an attractive location for high-quality manufacturing and industrial services of many types. The CEP should support the City’s growth plan by ensuring the energy infrastructure is reliable, clean and competitively priced.

The base-line assumption used was that this would grow at about the same rate as the population, with no significant change in overall efficiency. In this base-line, by 2031, economic activity would grow by 65% and energy consumption would grow by 1045 GWh_e/yr to 2,676 GWh_e/yr, with the associated increases in greenhouse gases.¹⁰⁴

To both accelerate the industrial growth and to mitigate the impacts of energy, the following strategies are recommended:

1. Designate the Southern Business Parks, the Northern Industrial areas, and the Eastern Industrial Parks and areas as “Scale Projects” for energy purposes and offer a tailored energy supply infrastructure suited to the targeted investors. The Mannheim and Austin examples covered in Section 10 indicate the concept that is being recommended. The energy services that could be bundled may include:
 - Electricity
 - Natural gas
 - Heating
 - Industrial grade steam
 - Cooling
 - Water and waste water
 - Compressed air

A full analysis is needed for each specific sub-project; however, typically these approaches create a reliable, lower cost energy service package, with a substantially lower greenhouse gas footprint due to the increased efficiency of fuel use.

¹⁰⁴ Assumption is that baseline industrial energy use of 1,167 GWh_e/yr will grow at 2% per year from 2007 to 2031 with no significant improvement in efficiency.

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2. On a site offering these energy services, the countervailing assumption is that the industrial users will be actively engaged in energy productivity measures and continuous improvements. This includes buildings with higher levels of efficiency than the current norms. Supporting user's continuous energy improvement programs may itself become a commercial opportunity for the energy services provider of the sites.

To estimate potential benefits, the assumption was made that tailored energy services would attract investment at a rate 25% higher than the underlying population growth and that industrial energy productivity would improve at about 2% per year for the period up to 2031.

Under these assumptions, industrial activity would grow by about 85% from today's levels, and delivered energy increase would be constrained to no more than 20%, or 216 GWh_e/yr.¹⁰⁵

Further, the integration of energy services on the Scale Projects will contribute to about half of the estimated gains in the city from improved fuel efficiency due to cogeneration strategies. This is a further reduction of Guelph's overall energy footprint due to industrial development of 400 GWh_e/yr when the gross impact of electricity use is included.¹⁰⁶

11.7. Transportation Efficiency

Target – As a result of sensitive urban design, effective alternative transport options, and encouraging vehicle efficiencies, Guelph's growth in transport needs be met while reducing the transportation energy use by 25%.

The currently available data on transportation within the city of Guelph is at a formative stage, and under active development. Based on the best assumptions available, personal and light commercial transportation within the city consumes about 1,743 GWh_e/yr or about 33% of all energy used. It is also the energy usage with the highest greenhouse gas content. Heavy freight adds about a further 10% to the total transportation energy of the city. Heavy freight will not be addressed at this time.

With unrestrained growth, energy usage by light vehicles will increase by 947 GWh_e/yr to 2,722 GWh_e/yr by 2031¹⁰⁷. This is probably understated as it assumes the same journey length on average, with growth simply being driven by population growth. This energy growth is nearly three times the targeted energy use for new housing. It is clearly an area for a high degree of focus.

¹⁰⁵ Assumption is that baseline industrial energy use of 1,167 GWh_e/yr will grow at 2.5% per year from 2007 to 2031 a 2% per year improvement in overall efficiency.

¹⁰⁶ Total 2006 baseline electricity delivered is 1,629,730 MWh_e/yr using 4,074,325 MWh_e/yr fuel. 2031 total electricity delivered is assumed to linear indexed by the total energy consumption of the city equal to 1,473,862 MWh_e/yr. The combined effect of cogeneration and solar PV reduces the assumed gross factor from 40% to 65% yielding a gross fuel requirement of 2,268,148 MWh_e/yr. The difference between delivered and fuel used in 2007 and 2031 is 1,650,309 MWh_e/yr. 25% of this is attributed to industrial efficiency, rounded down to 400 GWh_e in the text.

¹⁰⁷ 2006 Baseline is 1,743,000 MWh_e/yr for transportation. 2031 calculated with km/capita at 69% of today's levels based on impacts of urban design. Fuel efficiency per km traveled (by all mechanical transport means) is at 60% of today's average. These combined yield energy demands for transportation of 1,126,029 MWh_e/yr.

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The CEP is recommending the following strategies:

1. As a high priority, develop a detailed transportation strategy that fully integrates energy and greenhouse gas objectives.
2. Develop Scale Projects with urban design elements to reduce the number of journeys using individual vehicles by at least 1% per year for the foreseeable future, recognizing there will be an absolute increase in the number of journeys due to population growth. The bulk of this reduction will come from creating districts where many daily tasks can be completed on foot or by bike.
3. Identify high volume routes where high quality cost-competitive light rail or low-impact (clean-diesel¹⁰⁸/diesel hybrid/natural gas) buses could be used. The target should be at least to further reduce the number of individual vehicle journeys by 0.5% per year.
4. Create a city wide program to encourage the widespread use of increased fuel efficiency personal use vehicles that will increase the average fuel efficiency by 2% per year for the foreseeable future.

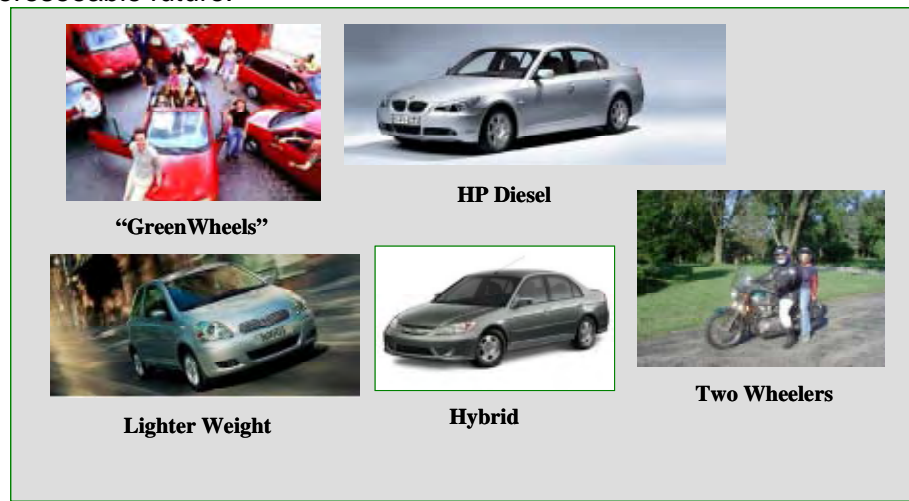


Figure 11.2 Encourage Fuel Efficient Light Vehicles

The choices will include the vehicle types in Figure 11.2. In a free market, there are limits to what a city can do, but at a minimum the following approaches should be considered:

- All publicly funded vehicles should be a visible contribution to the goal
- Parking privileges can be adjusted for different classes of vehicles and number of passengers
- Team with dealers to promote specific choices
- Team with fuel providers to promote specific choices

As an aside, the 2% per year efficiency improvement will require the 2031 average fuel efficiency to be 40% less than today. On an individual vehicle basis, this could be easily achieved with a 10 to 20% average weight reduction and switching to either HP Diesel or Hybrid drives. To achieve it at the city level will be an enormous challenge and require significant culture change.

¹⁰⁸ Clean-diesel includes bio-diesel and mineral diesel vehicles using low sulphur fuel at Euro IV standards

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Meeting the goals of journey avoidance and vehicle efficiency gains has an enormous impact on the energy footprint and greenhouse gas footprint of Guelph. The energy use in transportation instead of growing to 2,722 GWhe/yr, will reduce to 1,126 GWhe/yr even after allowing for the increased demand from a growing population. Clearly this is one of the most challenging targets, but is also one of the most attractive efficiency opportunities.

11.8. Summary of Efficiency Opportunities

Sector	2005 GWhe/year	2031 GWhe/year	2005 MWhe/capita	2031 MWhe/capita
Residential	1,610	1,473	14.00	8.18
Commercial	1,046	1,076	9.10	5.98
Industrial	1,631	1,848	10.15	10.27
Transport	1,743	1,126	15.16	6.26
Total* (Net)	6030	5,523	48.31	30.69

**Does not include electricity conversion energy*

Figure 11.3 Summary of Efficiency Opportunities

11.9. Ensuring Flexible Energy Supply

Target – Incrementally create energy distribution architecture in Guelph that will allow the majority of the city to be served with fuel choices that optimize cost, availability and environmental impact long into the future.

A successful community energy plan must take into account that over the decades that form the horizon of the plan, options for fuel, energy conversion, distribution and management technologies will change, and there must be sufficient flexibility built in to adapt as costs and technologies change.

As the CEP is implemented, each of these will be the subject to detailed assessments. The benchmark cities of Mannheim and Copenhagen share the following basic energy architecture.

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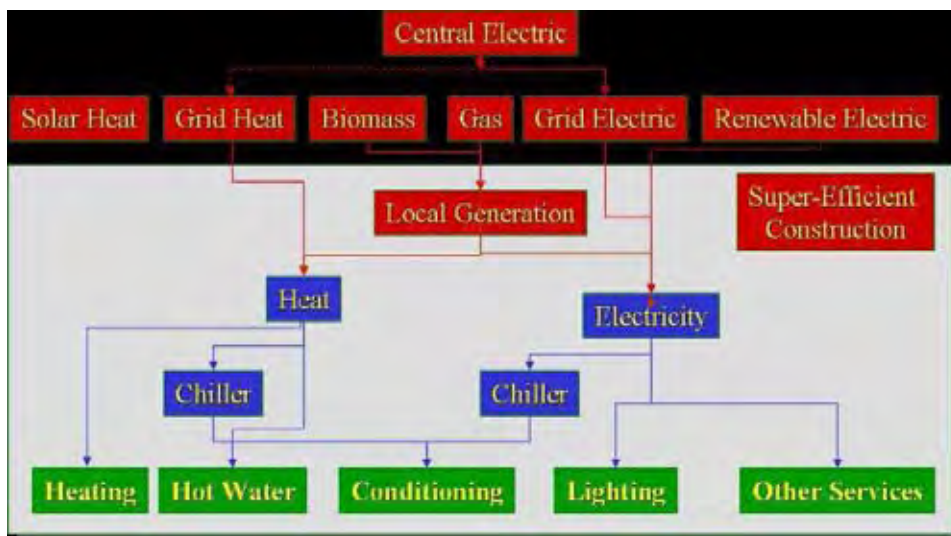


Figure 11.4 Example of Integrated City Energy Architecture

This approach allows distribution of not only gas and electricity, but also heat, and sometimes cooling, as public utilities. Once a reasonably widespread district energy network is in place, various heat and electricity sources can be easily combined, and can change over time.

As seen in Section 7, Guelph has a very high heating demand for its buildings and homes. It is the recommendation of the CEP team that a priority focus be placed on developing district energy in areas where a high density of heating demand already exists, or is planned to exist. This is one of the basic features of the scale projects. This is done by developing a network using pressurized hot water, running at about 120°C. This approach is more efficient than individual boilers and furnaces. Heat distribution is done via insulated pipes laid in the streets. These typically have a fully functional lifespan of 75 to 100 years. Figure 11.5 shows a typical preparation of a street prior to laying the district heating pipe.

Connection at the buildings or homes is via a simple heat exchanger that transfers heating to the building's heating and domestic hot water system, obviating the need for a boiler and a furnace. If justified by the economics, there are analogous district cooling networks. In Guelph's climate these will probably be limited to high-density commercial developments, and significant industrial cooling loads.

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Figure 11.5 Laying District Heat Feeders in Mannheim

The basic recommendations of the CEP are:

1. Develop a long-term approach to creating a district heating system that covers the high density areas of Guelph
2. Initially focus on developing local networks within the context of the Scale Projects with the medium term aim to interlink the local networks into a city wide structure where justified by demand and economics.
3. Create a municipal energy services company that has a franchise to deliver a wide portfolio of energy services including electricity, gas, heating and cooling. Other services, such as compressed air, could be included selectively.

Over time, a district energy system becomes more and more efficient and economically attractive as multiple heat sources are integrated along with a growing portfolio of clients. The experience of Mannheim and Copenhagen is that the sale of heat utility is ultimately more attractive than the sale of electricity. The creation of a municipal energy service must be done considering current regulatory factors. In general, while sometimes challenging, these do not appear to be insurmountable.

11.10. Integrating Renewable Energy Sources

Target – Within fifteen years, at least a quarter of Guelph's total energy requirement will be competitively sourced from locally created renewable resources

The climate and surroundings of Guelph have reasonable potential for the implementation of renewable energy. However, with the current relatively low costs of electricity and natural gas, many of these will need to be phased in selectively.

A constant challenge for renewable is that they are competing in markets where there is no carbon penalty for use of fossil fuels, nor carbon avoidance benefit for avoiding carbon creation through the implementation of efficiency and the use of renewable fuels and heat recovery. In the EU, the value of a tonne of carbon has fluctuated between a low of \$CAD 7 and a high of \$CAD35 since the opening of the European Trading Scheme in

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2005. There is some merit in including a band of hypothetical benefit/penalty to evaluate the future potential opportunity or risk avoidance due to reduced greenhouse gases.

The strategic recommendations are:

1. **Solar Photovoltaic** - Develop a plan that would replace at least 20% of all anticipated electricity requirements by 2031. At anticipated efficiency levels, this would be between 800,000 and 1,200,000 m² of cells¹⁰⁹. This area would translate roughly into a “Thousand Roofs” – which could serve as a simple way to communicate the target.¹¹⁰

The solar profile of Guelph outlined indicates that the area is a reasonable to generate electricity. Without subsidies, this would be unattractive, but with the Standard Offer Contract of 42 cents / kWh for at least twenty years, it is reasonably attractive. Solar production would peak in the summer when overall electricity demand is highest; an added plus for the traditional electricity provider

2. **Wind Electricity** – Not proceed with local wind solutions unless efficiencies or incentives change significantly.

Guelph is an average area for wind generation, and with the relatively modest Standard Offer Contract, it is an unattractive option. with current technologies and pricing. There may be isolated locations and circumstances where this recommendation should be revisited.

3. **Biomass Heat** – At least 10% of the base load heat for the city should be targeted, which would be in the 25 to 40 MW (thermal) range. Biomass should be evaluated as a viable alternative for base load heating for large commercial or institutional structures, typically larger than 10,000 m².

Guelph is well placed to source large quantities of biomass fuels, generally from locally sourced forestry waste, probably in the form of wood pellets. The City Council approved in the 2007 budget, funds to assess the feasibility of building a wood cogeneration facility at the city's Wet-Dry Facility. There is a local entrepreneur planning to place a plant in the city. In Europe, where wood based biomass is increasingly common as a scale fuel, the experience is that prices rapidly align with natural gas equivalents, so the earlier long-term contracts are made, the more advantageous the returns.

¹⁰⁹ Referring to Section 6.7.2, the potential for electricity generation from a PV system facing directly south at a tilt angle of 34 degrees, is 185 KWh/m². The areas quoted of 800,000 and 1,200,000 m² assume a system efficiency of 12.7%. This system efficiency is based on the use of commercially available multi-crystalline PV modules and high efficiency grid-connected inverters.

¹¹⁰ Comparable to the State of California's “Million Roofs” Program

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Figure 11.6 Typical Modern 1 MW (Thermal) Wood Boiler

With the right pricing for fuel, biomass is a very effective base-load heat source for the 2000 to 3000 hours needed in a Guelph winter. Biomass will be a high probability alternative for winter heat sources where local area networks are being put in place via the Scale Projects.

4. **Waste to Energy** - Evaluate using municipal waste as an energy source for heat and electricity. One of the most neglected fuels in North America is municipal waste.



Figure 11.7 Modern Municipal Waste-to-Energy Plant

Figure 11.7 shows a modern waste-to-energy plant using French technology, in South Carolina. It uses about 200,000 tonnes of fuel a year, generating about 9 MW of electricity and slightly more equivalent useable heat. These systems meet global clean

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air standards, and generate much less greenhouse gas than landfill or composting alternatives.

Guelph generates about 109, 000 tonnes of waste a year, most of which is combustible. With the appropriate site for fuel handling and proximity to a heat load, this is perfectly viable option to evaluate. The recommendation would be to do this in conjunction with a scale project to ensure a heat load be available. Guelph's volume of waste seen as fuel is at the bottom end of the economic range, and teaming with municipalities like Waterloo, Cambridge and Kitchener might make sense.

5. **Other Non-transport Renewable** – Depending on future costs of electricity supply, ground source heat pumps may be a viable option. Generally, they are less attractive than other options, especially when efficiency or district heating is a viable alternative. Solar heating this far north is a less attractive option, since the heat demand is at the highest during the least viable times. If associated with district energy, or other large scale heat distribution system, the economics may be justified.
6. **Renewable Transport Fuels** - Given the small size of Guelph, it is unrealistic to have a dedicated strategy for the city around renewable transport fuels. The recommendation is that public and individual vehicle users should constantly review available renewable fuel options, and where they make sense, procure and drive vehicles accordingly. The city can put its influence behind provincial or national renewable transport fuels initiatives. A potential investor, Amaizing, is already exploring the possibility to build an ethanol plant in Guelph.

11.11. Integrating Combined Heat and Power (Cogeneration)

Target – At least 30% of Guelph's anticipated electricity requirements will be associated with Combined Heat and Power (cogeneration) by 2031.

As the city energy system evolves as indicated in Section 10.8, it is easier to include small and medium scale combined heat and power (CHP) installations. Today, Guelph uses 1,627 GWh_e/yr of electricity all distributed with no heat recovery. The energy value of the fuel used to make the electricity is 4,074 GWh_e/yr. The difference of 2,447 GWh_e/yr is the fuel value lost in heat at the generator, and in transmission losses between the central plants and the city. The consumer is paying for this unused energy, and the planet is absorbing the environmental impact. Implementing CHP has a major positive impact on greenhouse gas creation.

The basic recommendations are:

1. Implement CHP solutions in selected Scale Projects, initially probably St Patrick's Ward and Southern Business Park area. These produce both electricity and heat for distribution via a district energy network.
2. Encourage commercial CHP projects such as the one being implemented at OMAF and potentially in areas such as the university. To enhance the overall economics, wherever possible, look for ways to incorporate these into emerging district energy systems.

To meet the above target, and to develop reasonable scale, the initial two or three installations are likely to be in the 15 to 25 MW (electric) size, with a comparable amount of heat recovery.

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11.12. Integrating Innovative Cooling Strategies

Target – Guelph will reduce the magnitude of the summer grid electrical peak by at least 40% by 2031 to avoid the need for investment in new electrical infrastructure to serve the growth of the city

Guelph, like many prosperous northern continental cities, is experiencing a growing consumer demand for air conditioning in the summer. This creates the significant summer peak electrical requirements for a relatively short space of time in turn driving high levels of investment for the electrical utility.

The basic strategic elements to achieve the above target have basically already been recommended:

1. Solar generation from a “Thousand Roofs”
2. Efficient residential and commercial construction
3. CHP systems in the Scale Projects

The following strategies to reduce cooling peaks are also recommended:

1. Explore opportunities to use low-cost heat in the summer to deliver cooling via absorption chilling. This is generally attractive when large amounts of existing industrial waste heat are available. The most obvious source in Guelph is the Owens Corning glass melter in St. Patrick’s Ward.
2. Explore opportunities to smooth the peak, by using ice-storage techniques using off peak electricity

Both of these opportunities would probably be in a partnership between a significant commercial or institutional demand and the proposed municipal energy services provider.

11.13. Integrated Network and Building Management

Target - Guelph will systematically create an integrated energy metering, billing and management network across the entire city to allow cost-effective management of all energy forms

The breakthroughs that Guelph is aiming to create through the CEP will come from the ability to integrate many separate actions and gain the leverage between them.

For this reason, the CEP is recommending that the city develop a detailed concept for the reasonable integration of both utility and consumer owned energy generation assets. This should include bi-directional time of day metering¹¹¹ of all forms of energy. The concept should allow centrally managed dispatching of distributed energy assets, regardless of ownership.

This will evolve stepwise, probably starting within the scale projects. However, having framework architecture in place will encourage the long term creation of the network.

¹¹¹ The GHESI Smart Metering pilot is a initial step in this direction – See Section 8

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11.14. Establishing City Guidelines for Homes and Buildings

The CEP calls for energy efficiency of buildings consistently above the prevailing code for both new and existing buildings. The experience of most markets around the world is that purely voluntary programs rarely deliver significant results above code. Where they have been successful, there is usually a confluence of some combination of the following items:

- Planning Authorities require narrative comments that address the degree with which the planning requests are expected to meet the CEP's expectations
- There may be some timing preference given to approving construction requests that meet the CEP guidelines
- The influential builders and developers in the community throw their weight, reputation and commitment behind the enhanced guidelines
- Provincial or Federal bodies treat the City Scale Project as a pilot for the province or the country and provide both process and financial support
- Some group in the city, usually a teaming between city administration, university and some key builders, support education and professional development programs for builders
- Local lenders give a preference in some way to the enhanced buildings, usually in the form of extended credit limits or discounted mortgage rates

The following are the CEP recommendations

1. The City will develop clear, unequivocal guidelines based on the CEP strategic targets and work with a variety of constituencies to bring them to life
2. The City should engage the OPA Office of Conservation and Natural Resources Canada to have the CEP positioned as a provincial pilot including the EP labelling
3. Construction and planning requests should respond to the guidelines, even if the legal framework does not explicitly demand this
4. The Guelph Development Association, the University of Guelph and Conestoga College cooperate to develop an educational and professional development program to assist builders and contractors to build energy related understanding and expertise
5. Identify a local bank to set up a pilot program to create clear incremental benefits for a financing or mortgage request if supported by an EP labeled building

11.15. Accelerating CEP Implementation - Scale Projects

Target – Guelph will implement large area high efficiency Scale Projects that accelerate progress towards a successful implementation of the Community Energy Plan by creating early successes and developing a deep pool of community expertise.

A key part of the overall CEP recommendations includes so called Scale Projects. We are seeing a trend for cities to develop Community Energy Plans in response to the challenges highlighted in Section 3. Despite the quality of many of these plans, there is an underlying question as to how many will be successfully implemented. The Guelph Consortium was clear in its guidelines that it was looking for a plan that would deliver real results.

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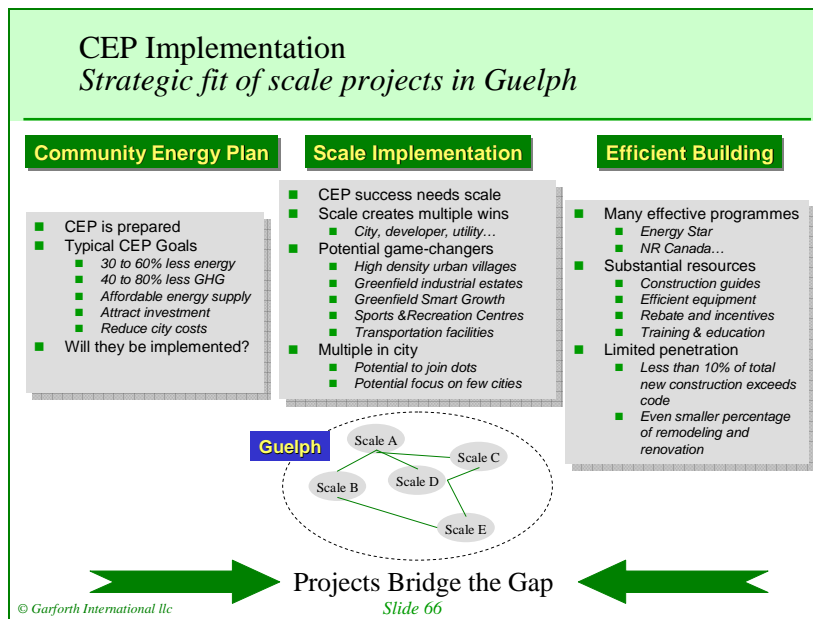


Figure 11.8 Accelerating CEP Implementation with Scale Projects

Typical CEP goals are on the left of Figure 11.8. They address achieving substantial energy use reductions accompanied by even greater greenhouse gas creation reductions to deliver a competitive attractive city with breakthrough environmental performance. Delivering these involves tackling the overall efficiency of homes, buildings, transportation, industry and energy supply, which are daunting tasks at a city level.

All too often, once the true scope of the energy productivity challenges becomes apparent, CEPs stall and become visionary statements of intent, with little implementation success.

On the other hand, there are many excellent programs to encourage efficiency in individual buildings by raising consumer awareness, offering guidelines for builders, various types of training and voluntary rating. Examples are Energy Star¹¹², Canada Green Building Council¹¹³, and Green Globes¹¹⁴ among many from around the world. Utilities also have excellent energy saving guidelines for all users. These all offer excellent materials to support awareness and efficient construction and operation of buildings. They are to be applauded in radically raising the awareness of the opportunities and solutions available.

By definition, a CEP is energy and water productivity goals that go far beyond the statutory minimum of the day. For this reason, the CEP is recommending the rapid implementation of the new Ontario Building Code.

However, implementing a CEP “one building at a time” does not create the scale that clearly incorporates efficient energy supply, and inevitably fails to demonstrate the potential scale economics and other market benefits.

¹¹² See <http://oee.nrcan.gc.ca/energystar/english/consumers/index.cfm>

¹¹³ See <http://www.cagbc.org/>

¹¹⁴ See <http://www.thegbi.com/greenglobes/history.asp>

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When Guelph benchmarked cities with successful energy and water efficiency achievements, it was clear that one of the differentiating aspects was the willingness of the community to embark on implementing multiple Scale Projects at an early stage of CEP.

Typically these are distinct areas of the city where the size and timing of planned development was such that “new rules” in line with the CEP could be applied within large, but contained boundaries. They are of a scale that is large enough to address the issues of both the efficiency demand and energy and water supply.

Each would be developed in such a way that over time, multiple Scale Projects would ultimately blend into an overall city context and by “connecting the dots” create the city wide outcomes.

The recommendations are:

1. As a part of the final Community Energy Plan, the Consortium confirm the recommendations of the initial portfolio of Scale Projects
2. The City, working with all relevant parties, ensures adequate resources are identified to develop investment grade Integrated Energy and Water Master Plans for each Scale Project to confirm the viability and identify the critical implementation steps. These planning resources may be available in part from Provincial or Federal programs that support energy and water conservation efforts.
3. The City, working with all relevant parties, ensures that early actions especially around long-term infrastructure, such as reserving land for distributed energy installations and establishing rights of way for projects like district heating networks or grey water management systems.
4. Once the viability of a Scale Project is confirmed, the city must put in place a process to ensure the step-by-step implementation of the Scale Project ultimately meets the goals of the CEP as a whole. This can be in various forms, from a formal “Urban Sustainability Planning Overlay District” to gaining the commitments from commercial developers.
5. Throughout the process communicate clearly the goals and the steps being taken to all relevant parties. The successful implementation of these Scale Projects should be clear examples of success that the City as a whole should take pride in.

IT IS VERY IMPORTANT TO UNDERLINE THAT SCALE PROJECTS ARE NOT A SUBSTITUTE FOR THOUSANDS OF INDIVIDUAL ACTIONS AND PROGRAMS AROUND HOMES, BUILDINGS, TRANSPORTATION CHOICES AND CONTINUOUS IMPROVEMENTS. THEY ARE AN ADDITIONAL ELEMENT THAT IS CRITICAL TO THE OVERALL SUCCESS OF THE COMMUNITY ENERGY PLAN.

11.16. Scale Project Selection Criteria

Target – Guelph will identify potential Scale Projects that have high probability of being successfully implemented as a critical early step in the roll out of the Community Energy Plan

Selection of possible Scale Projects is already underway, with a candidate list proposed that will be discussed in Section 12. The following general criteria would guide the selection of future candidates:

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1. Be of a size to encompass customized energy and water supply strategies as well as large scale efficiency

This will vary depending on project, but typically would be one that would have an overall energy demand at least in the 15 to 25 MW (electric and thermal) range.

2. Be sufficiently clearly defined as such that bounded energy and water solutions are possible

A crucial aspect of the Scale Projects is to demonstrate many aspects of a sustainable energy and water solution as early as possible. This means timely implementation, availability of clear and specific data and ease of communication is key.

3. Have leadership that is motivated or at least open to consider new approaches

Leadership could come in many forms. It could come from a motivated commercial developer, visionary University leadership, dedicated utility and city management, or an engaged Neighborhood Development Group. This is not an exhaustive list.

4. Have the potential to attract appropriate energy supply investments and energy services operators

This will usually mean the engagement of the local utility or utilities with other appropriate investment or operating partners

5. Have the potential to accept different energy supply, design guideline and building efficiency standards than in the rest of the city

This is clearly one of the toughest criteria. How this will be done will vary with each specific project, but it is clear that mechanisms, voluntary or otherwise, must be in place.

Typical types of Scale Projects are:

- **High Density Urban Villages**

These are typically areas of cities targeted for urban renewal usually covering at least 50 hectares with high density mixed use development planned. Scharnhauser Park, Stuttgart and Navy Yard at Noisette, Charleston examples are summarized in Appendix 6

- **Industrial Estates / Commercial Parks**

These are typically either completely new or existing industrial estates where availability of high quality, tailored energy services could be a key differentiator in attracting quality investment. They will typically be at least 100 hectares and be aimed at multiple industrial clients. Mannheim Island example is summarized in Appendix 6.

- **Greenfield Smart Growth**

The growing trend for mixed use, greenfield developments aimed at reducing suburban sprawl and creating more livable communities, also creates opportunities for innovative energy and water solutions. Suitable Scale Project would have at least 500 homes with some commercial-retail development with relatively high density. Bells Landing, Nashville example is summarized in Appendix 6.

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- **Sports and Recreation Centers**

These facilities with long opening hours and high energy facilities like auditoria, rehearsal rooms, swimming pools, ice rinks, saunas, gymnasias etc. makes them candidates to be Scale Projects. They are frequently operated as publicly supported facilities and have energy and water cost as significant challenges. They often also need to be examples of community values around energy and water efficiency. Often, they can be combined with other Scale Projects to optimize a larger energy at low cost. The YMCA Corning, New York and the SAP Stadium, Mannheim are summarized in Appendix 6.

- **Transportation Facilities**

Major transportation centers such as airports, railway centers, and multi-modal transport interchanges have similar energy characteristics to sports and recreation centers.

- **Academic Campuses**

These develop over the years with buildings being added and expanded often with a less than integrated approach. They are large energy consumers, frequently challenged by budgets. They also have accountability to form the ideas of the future, and are a natural supporter of successful energy and water efficiency plans. They also have scale. Lakeland Community College example is summarized in Appendix 6.

The examples in Appendix 6 demonstrate multiple benefits for all parties and substantial reduction in environmental impact. They also indicate improved reliability of energy supply and future cost risks being more effectively managed.

11.17. Guidelines for Energy Supply

Target – Guelph will put in place guidelines and processes that move users to the most effective sources of energy for both the individual user and for the city as a whole

A key part of successful implementation of scale projects will be the effective integration of efficient energy supply with appropriate urban design and efficient buildings. In some case this may require large scale changes in the way buildings receive some of their energy services.

The most obvious examples have already been extensively covered in the CEP. These include:

- Heating and domestic hot water via district heating networks rather than via electricity, heating oil or natural gas fired boilers and furnaces
- Obtaining cooling via district cooling networks rather than via in-building
- Obtaining a part of electricity via solar photovoltaic systems
- Obtaining heating and electricity via in-home micro-cogeneration

Given that regulatory reality today would generally not allow the city to mandate these changes, the following recommendations are made:

1. All planning requests in a designated Scale Project should clearly explain why a solution other than the Scale Project Energy Plan recommendation is being proposed

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2. Requests that utilize the recommended energy supply solution will receive various forms of public support including installation training and any applicable conservation incentives
3. Realign the energy services framework of the city, starting in the scale projects, to eliminate the operational risks of new approaches for the individual developer, builder, owner or tenant
4. The possibility to enact formal bylaws or regulations around “energy zoning” will be explored as a future possibility, starting with “overlay zoning” in the Scale Projects

The experience from other jurisdictions suggests this is a transitional issue. Once the community recognizes that new energy systems are lower in cost and equally as reliable and convenient as the current solutions, the resistance to change falls away. In fact, the reverse happens – they start demanding connection to the emerging new systems once the building design advantages and consumer benefits are clearly understood.

11.18. Incentives

Target – Guelph will have a highly effective information sharing and assistance resource to ensure that all available energy and water conservation and climate change mitigation incentive programs are publicized and available to all interested parties.

Target – Guelph will establish local incentives to accelerate progress towards the goals of the community energy plan

All the recommendations in the CEP are based on the experiences from around the world that the market value of energy and water efficiency rapidly becomes self financing. However, there is a range of incentives from Federal, Provincial and utility sources that support selected renewable energy, efficient appliances, avoided electrical consumption and efficient construction.

There are incentives for industrial and commercial users, the construction industry and homeowners. Natural Resources Canada¹¹⁵ and Ontario Provincial¹¹⁶ sites have good overviews of consolidated information. This report will not attempt to summarize all the various incentives at this stage.

A successful Community Energy Plan will be implemented with incentives viewed as added value to the Plan. The availability of an incentive program may adapt the priorities slightly by accelerating a particular approach or technology. The basic city framework outlined in this CEP has the potential to be reprioritized without changing the basic direction.

However, some general recommendations around local management of incentives are being made:

1. Guelph should establish a clearing house providing information, application support, and outreach to ensure that all available incentives are publicized and used.

¹¹⁵ See <http://oee.nrcan.gc.ca/corporate/incentives.cfm>

¹¹⁶ See <http://www.conservationbureau.on.ca/>

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Many incentives can be relatively short lived, are subject to a degree of interpretation and not always easy to apply for. Creating a resource that can support potential applicants in a systematic way will ensure the incentive value is maximized.

2. Guelph should make any investment incentives for commercial or industrial investors conditional on meeting the above-code standards of energy and water performance.

Communities frequently offer incentives to attract investors. This is an opportunity to guide investors to use communal energy resources such as district energy, and to encourage the incoming investor to build and operate their facilities at a high level of energy productivity.

3. Incentives such as selected parking, energy efficient mortgages and priority planning approvals have already been discussed at the city level and should be encouraged

11.19. Regulatory Aspects

Target – The City and the wider community leadership is committed to positively handle all legal and regulatory aspects with local, provincial and national bodies to ensure Guelph’s commitment to deliver the CEP is never jeopardized by constraining regulations or market practices.

Target – Guelph is offering its community as a national prototype for adjusted regulatory and business models to guide Canada’s pathway to meet its energy, climate change and water challenges of the future.

There is a basic paradox in most of the recommendations within the CEP. They are all based on benchmarking information that clearly demonstrates the elements necessary to be integrated in terms of end use efficiency, energy distribution, and the choice and effective use of fuels. However, the benchmarking examples are operating in different regulatory regimes where the implementation of many of the measures has been either made mandatory or barriers to voluntary implementation have been removed.

In the case of Guelph, the following are the basic regulatory constraints along with recommendations to manage them:

1. ***Building Codes*** – Even though these are a provincial jurisdiction, the new 2006 Ontario code will be one of the strongest in North America upon implementation in 2012. Accelerating the implementation offers an opportunity for developers to get ahead of the competition and will have minimal impact on profitability in a solid property market like Guelph. The voluntary EP Labelling simply reinforces their potential to capture market added-value, and has a high probability of being supported as a national pilot.
2. ***Electricity Generation and Distribution*** – Electricity generation, transmission, distribution and pricing fall under provincial jurisdiction. The CEP at a minimum is calling for significant amounts of electricity from cogeneration within the scale projects and solar electricity distributed across the city. GHESI can be a generator. A precedent to be a non-traditional generator has been established with the Ecotricity operation. It would appear to be within the realm of probability that Guelph could be treated as a provincial pilot for a more integrated system.

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3. **Gas, Heating and Steam Distribution** – Gas distribution is owned by Union Gas (a Spectra Energy Company) and is under provincial jurisdiction with minor competitive market options. The CEP calls for district heating and maybe industrial steam distribution to be an option, initially within the scale projects, and ultimately across wider areas of the city. District heating can be considered to be a functional competitor with retail gas, and experience from other jurisdictions, especially in Germany, Scandinavia and central Europe, sustained competition between the two media is not economically sound. Hence the earlier recommendation of moving towards some form of voluntary or mandated energy zoning. Since both Guelph Hydro and Union Gas are members of the consortium, and given the growing interest in Ontario in creating, or recreating, district energy systems, a resolution to these market and regulatory aspects should be able to be resolved. Gas will be a significant fuel source for any district heating system.
4. **Vehicle Efficiency and Transport Fuels** – These are regulated at the Federal level. The CEP calls for a voluntary and urban design approach to these aspects, therefore there are no regulatory issues.

11.20. Managing the Process - City Leadership

Target – The commitment of the elected officials and professional management of the city from all sides of the political spectrum will never be in doubt

The City's role is crucial in successfully implementing the CEP. The recommendations are:

1. The Community Energy Plan will be a part of the public record, voted on by the City Council.
The plan should probably be revisited about once every five years for adjustments and course corrections on the recommendations. The basic Vision, Goals and Measurements should not be adjusted except to make them even more aggressive (a very unlikely event for at least 20 years) or if they have clearly been found to be counterproductive to achieving the overall intent.
2. All elected leaders, now and in the future, should be fully briefed on the Vision, Goals and status of implementation of the energy plan
The importance of maintaining political neutrality in support of the basic framework of the CEP cannot be overemphasized. Developing an efficient communal infrastructure that can deliver the kind of goals Guelph has embraced will only happen with consistent long-term implementation.
3. All non-elected leaders and department heads, now and in the future, should be fully briefed on the Visions, Goals and status of the implementation of the energy plan, and the importance and role of their department in contributing to their goals.
4. The public “owner” of the Community Energy Plan’s Vision, Goals and Results should always be clearly and visibly seen to be the incumbent Mayor
This is analogous to the consultant’s experiences in industrial energy management. Companies where the CEO is visibly and continuously committed to energy and water productivity are the ones that deliver the breakthroughs. This is not a role that can be delegated.

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5. Progress against the CEP should be a routine agenda item on all City Council Meetings

All that is needed is a few minutes report on progress against the goals, significant actions taken, challenges and corrective actions underway. It should be a clear commitment by the City to regularly report on its progress. This will enable groups willing to act as the conscience of the City in this aspect to be able to carry out that task.

6. Assign a City Energy/Water Manager as the single point of contact for the CEP

A common argument against creating this role is that it may cause other departments to not fully take on their role and contribute to the success of the CEP. Whoever takes on this role must have a high level of credibility in the community, and be clearly seen as having the full support of the Mayor and the City Manager.

11.21. Managing the Process - Community Engagement

Target – The business community, financial institutions, neighborhood groups, utilities, architects, developers, construction industry, academia and the city administration will treat the vision, goals, recommended actions and progress of the CEP as a key measure of Guelph’s overall success in becoming a world class city in which to live, work and play.

The community in Guelph has shown extraordinary leadership to date in gathering together the key constituencies to develop the dialog that has led to the draft CEP. Moving into the implementation phase, the role of the Consortium members becomes even more important.

The recommendations for CEP are:

1. The original mandate of the Consortium was to bring forward a document that would form the foundation of a Guelph Community Energy Plan. Upon receiving and accepting the vision and goals laid out in the final Guelph Community Energy Plan document this mandate will have been met. The co-chairs of the Consortium will be tasked with establishing recommendations on a strategy for moving forward.

As the CEP moves to implementation, the Consortium’s guiding role has changed. The clear ongoing role for the individual members of the Consortium is to ensure that the Visions and Goals of the CEP and the associated results become part of the daily fabric of Guelph’s future development. This shift should be seen as a clear measure of success for the Consortium as a whole.

2. Actively create neighborhood and community groups around the Scale Projects that are committed to ensuring there is a high level of local understanding and engagement in the broader goals

As the Scale Projects develop each will have their own constituency - some more business and industry focused, other in existing urban neighborhoods, yet others will be mostly newcomers to the city greenfield environments

3. Utilize the University and community colleges as the focus for educating all areas of the community in the multiple aspects of moving towards sustainable urban structures

This is a very broad area including formal curriculum offerings around energy and water resource planning and management, construction and facility management training, high

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school orientation, and public awareness. This is probably the logical focus to consider for the clearing house for national and provisional incentives. The consultant is strongly recommending teaming this with academic and civic leaders in either Germany or Scandinavia

4. Utilize local schools as an outlet for educating the community in all aspects of the plan and energy conservation initiatives arising from it.

Elementary school students would be an ideal source for promoting energy conservation initiatives within their family environment and subsequently the community as a whole. All schools could take part in Board-wide initiatives that could lead to measurable energy and GHG reductions at respective schools. High School curricula could include discussion on the CEP and monitoring progress on initiatives arising from it.

11.22. Managing the Process - Energy Services Organization

Target – Guelph will be served by a municipal energy service organization that is structured to ensure the highest reliability, least cost and least environmental impact energy services of all types.

This is probably the easiest recommendation to make, and maybe the most sensitive politically. In all the benchmarking, the operating model that consistently comes to the forefront is one with the following characteristics:

1. Delivers, meters and invoices electricity, gas, district heating, district cooling within a single business model under a franchise controlled by the municipality
2. Has centralized dispatching capability for all energy forms
3. Is either the sole buyer for the output of, or the operator of, renewable, waste-to-energy, and cogeneration, central heat-only, and central cooling-only facilities
4. Is financially managed and accountable to its stakeholders in the same fashion as any normal commercial company
5. Captures and summarizes the bulk of the data and measurements to track the prevailing community energy plan

The legal and investment structures can be very different. MVV Energie AG, Mannheim is a city/private partnership listed on the stock exchange. Austin Energy is a city owned multi-utility. Copenhagen is served by a federation of neighborhood cooperatives. In other cases, the entity is some form of investor owned partnership with the City as the franchisor.

Once fully established, with reasonable scale, these entities typically generate returns around two times higher than traditional electric utilities. Further detailed assessment is needed for Guelph, but there is no reason not to see this as the most likely outcome.

The recommendation is for Guelph to develop a framework that over a reasonable period of time would create a unified, municipal multi-utility operating under franchise from the city.

City of Guelph Community Energy Plan**11.23. Measurement, Reporting and Communications**

Target – Guelph will consistently measure and report its progress towards the goals of the CEP to its citizens

As the CEP is implemented, the residential, commercial, institutional and industrial energy, potable water and associated greenhouse gas data will be made available by the energy services entity. The building energy and water efficiency data can easily be derived by the city planning and builders, and the operational efficiency data through the EP labelling program. Reporting would be at regular council meetings, and on the City web site.

A multilayer communications strategy needs to be developed, which should be an immediate task of the Consortium and the City following the acceptance of the draft CEP. Most of the elements have been covered through this strategic narrative. The Consortium and the city need to budget for this in 2007.

11.24. CEP Budgeting

The bulk of the financial impacts of the CEP become self-financing as the benefits of integrated energy and water productivity takes hold. However, some items will need to be budgeted to create a basic infrastructure to manage the roll out of the Community Energy Plan; the Consortium needs to address the need for some initial budgeting of the following items:

1. City Energy Manager
2. CEP Communications Plan Development and Implementation
3. CEP Training / Workshops
4. EP Labelling program
5. Pre-Feasibility Integrated Energy and Water Master Planning for Scale Projects

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Guelph Community Energy Plan - Initial Start-up Budget

Item	2007 (x1000)	2008 (X1000)	2009 (x1000)	Ongoing pA (x1000)	Comments
City Energy Manager	\$100	\$100	\$100	\$100	Full-time city employee
CEP Communication Plan	\$250	\$50	\$50	\$50	Design & program maintenance cost only
CEP Training	\$150	\$50	\$50	\$50	Design & program maintenance cost only Operating cost covered by fees
CEP Workshops	\$20	\$20	\$20	\$20	Estimated 10/year - direct costs only
EP Labelling Program	\$75	\$50	\$50	\$50	Design & program manintenance costs Operating cost covered by fees
CEP Refinement	\$50	\$50	\$20	\$20	Incidental consulting Goal/data validation
Scale Projects Feasibility IEMP				\$200	Multiple projects and sub-projects' IEMPs
South Area Phase 1	\$275				Industrial/Commercial & key linkages
South Area Phase 2		\$150			Residential / Smart Growth
St Patrick's Ward Phase 1	\$50				Engineering and Feasibility Study
St Patrick's Ward Phase 2		\$275	\$275		Critical infrastructure and priority development areas
York Road Industrial		\$150			Industrial/Commercial & key linkages
Downtown Community Improvement Plan	\$50	\$50	\$50		Overall Scope & critical infrastructure folowed by sub-project IEMP's
Total	\$1,020	\$945	\$615	\$490	

Figure 11.09 CEP Initial Start-up Budget

This has been estimated based on the market value of the various activities. However, some area will be candidates for in-kind or sponsored public/private partnerships, especially in the areas of communications, training or workshops. Other areas such as the EP labelling program and the Feasibility studies for scale projects are natural candidates for matching funds from Provincial or Federal Conservation programs.

11.25. Summary of Overall Energy Evolution

Consolidating the expected impacts of efficiency, cogeneration and solar electricity, the overall energy picture will directionally appear as summarized in Figure 11.10. Under this scenario, the greenhouse gas per capita for Guelph as defined earlier would drop from about 16 Tonnes per capita to about the current level of Sweden or 7 tonnes.

This is a very aggressive goal, but still 50% higher than the ultimate goal of the Community Energy Plan. These greenhouse gas goals will not be achieved by efficiency alone, and the need for aggressive cogeneration, district energy and renewable strategies cannot be overstated. This is clearly seen in the evolution of energy lost in electricity conversion;

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Sector	2005 GWh _e /yr	2031 GWh _e /yr	2005 MWh _e /cap	2031 MWh _e /cap
Residential	1,610	1,473	14.00	8.18
Commercial	1,046	1,076	9.10	5.98
Industrial	1,631	1,848	14.19	10.27
Transport	1,743	1,126	15.16	6.26
Total (Net)	6,030	5,523	52.45	30.69
Electrical conv.	2,445	612	21.26	3.40
Total (Gross)	8,475	6,135	73.71	34.09

Figure 11.10 Summary of Efficiency Opportunities

As reminder, this evolution is based on a population increase from 115,000 in 2005 to 180,000 in 2031 with an associated economic growth at a somewhat higher rate.

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12. TYPICAL SCALE PROJECTS

12.1. General

As outlined in the overall CEP Strategy, parallel implementation of selected Scale Projects is a pre-requisite for a successful overall implementation of the CEP. There follows a set of recommendations for potential Scale Projects that could be considered for implementation.

They were selected on the basis of the consulting team's experiences from around the world as typical where the likely multiple benefits would be substantial, and where the technical implementation would present minimal challenges. They have been openly discussed with various sectors of the Community, and have generally received a favorable reaction, and some healthy inputs.

However, it is important to underline that none of these has been given any detailed assessment. Typically, projects like these would have a detailed feasibility study, which would then be refined to an investment grade assessment leading to infrastructure and construction engineering. The one exception is St. Patrick's Ward, where a small amount of further detail has been assessed for one section of the Ward.

With these provisos, the following thoughts are offered to move the Community debate around scale projects in Guelph.

12.2. Industrial Parks in the South

The business parks developing to the south of the City, including the Hanlon Creek Business Park will be a key component of the successful growth of Guelph, aimed at attracting high-quality investors who will offer long term quality employment. This area will be developed in phases, with the initial phases already at an advanced stage.



Figure 12.1 Industrial Parks in the South

These business and industrial areas will also have new commercial and residential neighbors as the southern part of the City develops. The CEP is recommending developing an integrated

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energy concept for the South as one of the high priority scale projects. The concept would be to initially offer tailored energy solutions including heating, electricity, cooling, and industrial quality steam at prices and reliabilities that would add the attractiveness of the site. This is doubly attractive to the investor in that they not only get high quality tailored energy services, but they also avoid significant costs in terms of capital equipment and specialist staff. The planned phases are large enough to have a high efficiency local cogeneration facility with high levels of fuel efficiency due to the ability to deliver large amounts of heating and cooling.

In some cases, existing development will already have defined the energy frameworks, in other cases, there should be sufficient flexibility to adjust the direction along the guidelines recommended in the CEP.


The recommendation is to complete the Pre-Feasibility Integrated Energy Master Plan for this site during the first part of 2007.

The site is close enough to other parts of the city which show suitable Scale Project potential, so the potential to link this initiative into a wider structure in the future is very real.

12.3. Campus Energy Master Plan – University of Guelph

The University is a research intensive institution and is one of the largest energy consumers in the city. As a thought leader, the CEP creates a unique opportunity for UoG to take their active energy and water management program to a whole new level.

Example: Large Academic Campus
University of Guelph



- **Largest Energy User**
 - 109 GWh/yr electric
 - 19 M m3/year
 - 633 kWhe/m2/yr
- **Long-term Campus Energy Master Plan**
 - Efficiency retrofits
 - Efficient new construction
 - Supply options – traditional / renewable
 - Integration into City Plan
 - Added curriculum subjects

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Figure 12.2 Overview of University of Guelph

The campus is a natural candidate for a fully integrated plan similar to the one described in Appendix 6 for Lakeland College but on a much larger scale. From energy auditing, there seems to be substantial opportunities to dramatically lower the operating costs of the campus by

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some millions of dollar per year. This would be achieved over the years with clearly prioritized investments in efficiency upgrades, upgrading for the district heating and cooling system, and possible implementation of cogeneration.

The University also has the opportunity to use its own implementation of a CEP Scale Project to be a live laboratory for training students, the wider community, and extending its offered curriculum.

The location of the university close to the rest of the city neighborhoods will make the campus a natural node in a wider city energy structure.

12.4. High-Density Urban Redevelopment – St. Patrick’s Ward

The St. Patrick’s Ward (SPW) is a unique community with a strong historical connection to Guelph and its early industries.



Figure 12.3 Overview of St Patrick’s Ward

An initial assessment of the Ward suggests it is a suitable site for a district heating system serving at least 70% of the fully developed site. The site would be compatible with cogeneration, probably in the 25 to 40MW range, and even has the potential for biomass peak heating.

New sewage and street renovation is planned to start soon, so the recommendation is to complete a pre-feasibility Integrated Energy Master Plan within the next six months, i.e. by mid-2007.

The team spent some time looking at this idea in more detail. Development to the east of the Speed River and the subsequent annexation of the SPW was in response to the construction of a railway in 1855. The Grand Trunk Railway (GTR) connection to Toronto spurred this development, attracted industry to the area and, with it, workers. A need for competition in pricing, spurred the creation of a second railway through Guelph, the Guelph Junction Railway, in 1888. These historical facts created:

- Mixed density residential neighborhood historically blended with both industrial and commercial zones;

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- Community where industrial expansion took over from planned residential development and large residences needed to cater to the rooming house needs of the workers;
- Community separated, to this day, from neighbourhoods to the north and downtown to the west by another railway, the GTR (now the CNR);
- Community split down the middle by one railway, the GJR.

A recent community improvement planning process recognized the unique character and history of the SPW and proposed the following goals (City of Guelph, 2003A):

1. Enhance SPW as an attractive place, with a high quality of life, for Guelph Residents to live, learn, work, shop, play, recreate, gather, and worship by investing in community improvements.
2. Encourage investment on industrial, commercial and residential lands and improve land use compatibility.
3. Provide a clear and flexible land use framework to accommodate change and provide a degree of certainty for private and public investment.
4. Improve the visual quality and accessibility of the area's public lands by improving key pedestrian linkages, parks, trails, streetscape and gateway entrance features.
5. Provide a prioritized 10-year program of community improvement initiatives for consideration in the City's Capital Budget process.
6. Consider future programs to encourage desirable development and investment.
7. Improve land use compatibility between residential, industrial and railway uses.

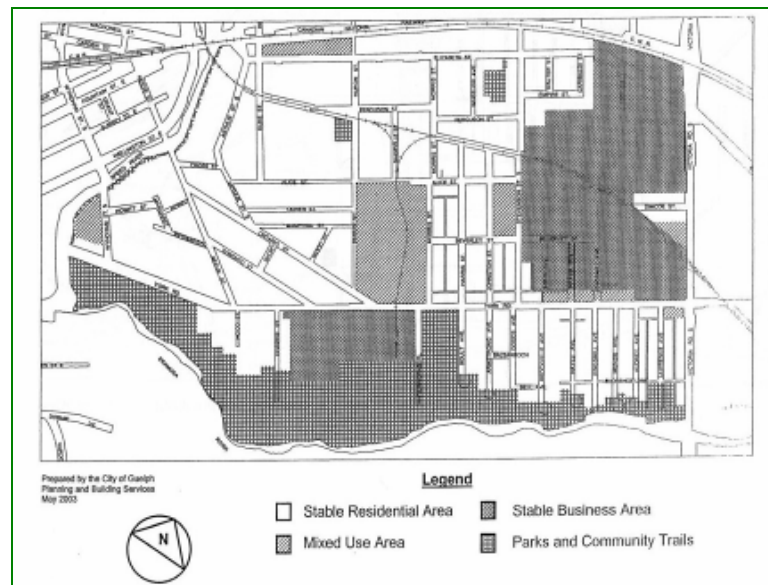


Figure 12.4: St. Patrick's Ward

Figure 12.4 is taken from the "St. Patrick's Ward Land Use Strategy" (City of Guelph, 2003), a document that was developed by the Planning and Building Services department as a reflection of public input to a process of identifying the need for community reinvestment.

St Patrick's Ward is:

- Bordered, to the west, by the Speed River, and to the south, by the Eramosa River, the point where John Galt first established the City of Guelph.

City of Guelph Community Energy Plan

- A neighbourhood through which railroads run. Forming the northern border is the Canadian National Railway (CNR) tracks and running straight through the SPW is the Guelph Junction Railway (GJR).
- Bordered by Victoria Road to the northeast.

The SPW has an approximate area of 1.8 km² and can be broken up into four main land use areas:

- Parks and Community Trails: Community trail linkages and community parklands
- Stable Residential Area: More than 90% of the residential properties in SPW were constructed prior to 1929. Nearly 200 properties are heritage listed. 70% of housing stock is detached; 30% semi-detached, duplex, townhouse or apartment units. Most lots are narrow and/or shallow. The land use strategy (City of Guelph, 2003A) promises to minimize change in the Stable Residential areas, especially those adjacent to business uses.
- Stable Business Area: These are the lands where major change is expected to occur. "Staff believes that the reform of business land use policies will have the greatest potential to improve the quality of life in the neighborhood while revitalizing and supporting the small business sector." (City of Guelph, 2003A) Development in the Stable Business area will need to be compatible with the Stable Residential area. This will be present itself as an ongoing balancing act between conflict and opportunity.
- Mixed Use Area: These areas are meant to meet neighborhood needs and build upon the existing character while reducing automobile dependency.

The land use strategy of 2003 confirms the existence of support for land use change in SPW, particularly in transitioning larger business use areas. A ten year investment plan was also created as part of the community consultation process.

The following issues stemming from these municipal plans, historical facts and neighborhood understandings support the immediate need for an integrated energy master plan for SPW:

- Plans to replace aged infrastructure are looming and are detailed in the Community Reinvestment Strategy document (City of Guelph, 2003B). Infrastructure recommendations stemming from an integrated energy plan could be incorporated economically and efficiently in existing plans now, ahead of their implementation in 2007.
- Residential intensification is likely or already planned for existing commercial properties. The WC Woods lands will be redeveloped for high-density residential and park use. Other industrial lands, such as the IMICO site, could support residential uses after clean-up. Zoning permissions and Official Plan amendments are assisting many properties to convert SPW slowly into a higher density residential mixed neighborhood.
- Commercial areas are moving from manufacturing to service oriented business focus.

This mix of small business and residential is a foundation to building the live, work and play village concept. Energy densities in such village neighborhoods can be zoned to increase energy productivity using district heating and cooling networks. These networks, as mentioned previously, could be installed in concert with the infrastructure upgrades of the 10-year SPW community investment strategy (City of Guelph, 2003B).

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Using aspects of the SPW, the following sections will illustrate the methodology for creating an integrated energy master plan. The first step develops energy zones for the SPW. We then illustrate the process involved in benchmarking current and future energy and domestic hot water demand. The zones where interest in future development exists are added. The assessment closes with a discussion of possible scenarios for the zones.

Developing Energy Zones Within a Sample District

Energy zoning is the first step in the preparation of an integrated energy plan and is common practise in the European Union. Energy zones anticipate future changes plus they divide the larger districts into smaller areas with similar properties. Each zone can then be analyzed to determine scenarios of future energy needs and associated densities. An number of combinations and timeframes are possible for bringing these zones together in a long term integrated plan. Each variation provides a district scenario of opportunity for consideration in the integrated energy master plan.

A preliminary assessment of SPW suggests 17 energy zones:



Figure 12.5 St Patrick's Ward – Indicative Energy Zones

These near-homogenous zones can be summarized according to streets as in Figure 12.6

City of Guelph Community Energy Plan

Zone	Streets included either fully or partially within zones
Woods (WC)	Arthur St, Duke St, Huron St, Elizabeth St
Industrial (Ind)	York Rd, Morris St, Alice St
Vacant (V)	Huron St, York Road, Stevenson St, Empire St, Garibaldi St
Commercial 1	Beverley St, York Rd, Smith Ave, Kingsmill Ave, Hayes Ave
Commercial 2	Elizabeth St, Victoria Rd, Erie St
Commercial 3	Johnston St, Alice St
Commercial 4	Wyndham St
Elizabeth Street	Elizabeth St, Stevenson St, Ferguson St
Stevenson (Steve)	Empire St, Harris St, Beverley St, Johnston St, Morris St, Wheeler Ave, Ferguson St, Garibaldi St, Walter St, Stevenson St
High Density (HD)	Wyndham St, Neeve St
Italian Canadian Club (ICC)	Ferguson St
Schools	Ontario St, Huron St
Simcoe (Sim)	Simcoe St, Victoria Rd
The Rest (Rest)	Alice St, Arthur St, Duke St, Howitt St, Huron St, Manitoba St, Margaret St, Menzie Ave, Morris St, Neeve St, Oliver St, Ontario St, Richardson St, Sackville St, Short St, Stevenson St, Toronto St, Victoria Rd, Wood St, Wyndham St, York Rd
Hood/Hooper (HH)	Hood St, Hooper St
York Road East (YRd)	Armstrong Ave, York Rd
South of York (SY)	Armstrong Ave, Audrey Ave, Balsarroch Pl, Bell Ave, Boult Ave, Brockville Ave, Dodds Ave, Hayes Ave, Kingsmill Ave, Lawrence Ave, Menzie Ave, Victoria Rd
Mills Lofts (Mill)	26 Ontario St
Swimming Pool (Swim)	within the York Rd park
Total area of SPW	Approximately 1.8 km²

Figure 12.6 Streets and Energy Zones for SPW

Combining this zoning with knowledge of the existing and planned building types, and the timing of the neighborhood development, the energy demands for differing levels of efficiency would be evaluated for heating, cooling, lighting and other electrical uses.

Simply as an example, the heating demand for the Woods District has been modeled based on differing efficiency levels:

City of Guelph Community Energy Plan

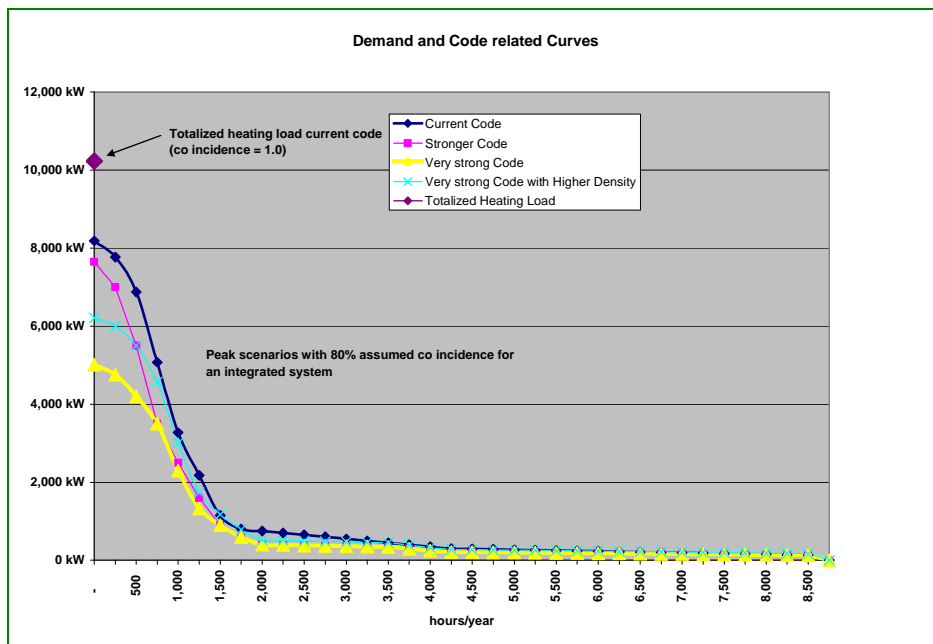


Figure 12.7 Heating Demand for Woods

This indicates that by building to the current code, the peak heating for this area would 12 MW, and by going to the new Ontario Code, as recommended by the CEP, this peak drops to 5MW, having enormous implications on the size of the heat sources and the district heating pipes needed. It also means much less pollution, and much less costs for the occupants.

Assessments would be made for cooling and other energy needs for each of the 17 zones, and then integrated to make a final recommendation on the energy infrastructure. A Pre-Feasibility IEMP includes a full economic assessment.

A full analysis has not been completed for the entire Ward, but this initial work indicates some of the detailed process that would be followed, and also indicated the potential energy saving that are possible through integrated approaches.

City of Guelph Community Energy Plan

12.5. Downtown Revitalization – Downtown Community Improvement Plan

Example: Downtown and Retail
Incorporate sustainable energy planning

- **Downtown Community Improvement Plan**
 - *Incorporate energy and water sustainability aspects*
- **Southern Gateway Retail**
 - *Explore possible energy and water productivity possibilities*



Copyright: Garforth International llc


Figure 12.8 Overview of Downtown and Retail

A number of initiatives are being considered to revitalize the City core, aimed at stimulating repopulation by creating an attractive urban living community. The relatively high density of these kind of projects, combined with the potential for renewing old utility infrastructure often bodes well for the creative implementation of the kind of energy productivity measures recommended in the CEP. Given downtown revitalization typically takes place over many years, the CEP is recommending establishing an integrated energy framework as soon as possible to guide this aspect of the Downtown revitalization efforts.

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12.6. Greenfield Mixed-use Neighborhood – South Guelph Developments

Idea: Southern Development?
Greenfield Mixed-Use Smart Growth



Southern Development

- Medium density development
- Retain significant open spaces
- Live, work, play
- LEED - Neighborhood Development Rating
- Neighborhood Energy Plan
 - Efficient construction
 - Clustered renewable options
 - Local heat and power
 - Design for minimum transport
 - Design for minimum water



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Figure 12.9 Overview of Southern Development

As was indicated at the start of this section, the entire South Side of Guelph is likely to be developed with Business and Industrial Parks, extensive retail developments and mixed use residentially focused areas. This is a window of time where the benefits of adopting an integrated approach to energy and water will pay dividends for the next 100 years. The CEP is recommending completing the Feasibility level Integrated Energy and Water Master Plan for this area within the 2007/2008 time frame.

These ideas are by no means cast in stone, nor are they the only possibilities. The recommendation is that the Consortium and the City get started on developing detailed IEMPs for at least St Patrick's Ward and the Southern Industrial areas, and then build from there.

APPENDIX 1

MANNHEIM MICRO-COGENERATION PRESS RELEASE

WhisperGen Limited
WhisperGen™ heat and power system
PO Box 12 705, 224 Armagh Street, Christchurch, New Zealand
phone: +64 3 363 5083 fax: +64 3 363 5084
info@whispergen.com
www.whispergen.com



PRESS RELEASE

Christchurch / Mannheim, 2nd August 2006

WhisperGen Limited and MVV Energie Group are pleased to announce their cooperation in a first large-scale pre-commercial trial of the innovative WhisperGen™ micro combined heat and power system in Germany.

Under the deal signed by WhisperGen Limited of New Zealand (formerly Whisper Tech) and MVV of Germany, at the end of July, the parties have agreed to enter into an exclusive agreement for the duration of the trial, during which the technology will be tested at end-user homes in Germany. The initial trial will involve 20 AC WhisperGen™ MkV systems tested in homes in Mannheim, Kiel and Solingen.

Since its stock market flotation in 1999, MVV Energie Group has developed into a modern and innovative energy distribution and energy-related service company. The MVV Energie Group has around 6,500 employees and generated sales of around Euro 2 billion during the 2004/05 financial year. MVV has been testing innovative energy and environmental technologies for several years, including the WhisperGen™ microCHP system.

WhisperGen Limited is a developer of micro combined heat and power ('microCHP') systems for the home. The WhisperGen™ microCHP system is designed to replace the conventional boiler of a home and provide both heat and electricity to the household. Its innovative Stirling engine is based on the latest developments in generator technology, and allows for a sleek, compact and efficient design.

Each WhisperGen™ microCHP system will provide 1 kW of electricity and up to 13 kW of heat, thereby reducing greenhouse gas emissions of CO₂ by 1000 kg per WhisperGen™ per year.

MVV Energie Group and WhisperGen Limited will be working together closely with each other to bring this innovative technology a step closer to commercial introduction in Germany. WhisperGen Limited has already launched its product in Britain through E.ON UK, and E.ON has made a commitment to order 90,000 systems. Trials are also taking place in a further 8 European countries with different partners.

For more information please contact:

Mr Bill Highet
WhisperGen Limited
224 Armagh St
Christchurch
New Zealand
www.whispergen.com
Tel: +64 21 591 591

Mr Roland Kress
MVV Energie AG
Group Communications
Luisenring 49
68159 Mannheim
Germany
www.mvv-energie-ag.de
Tel: +49 (0) 621 290 3413

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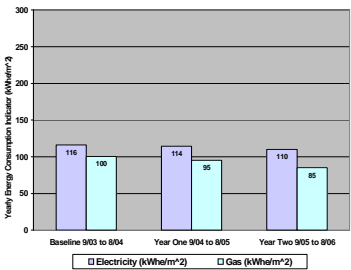

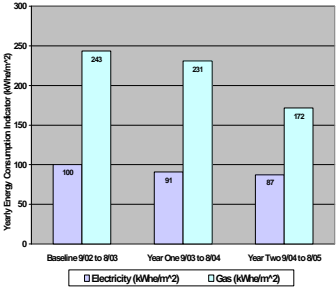
APPENDIX 2

STUDENT WORKSHOP - SCHOOL BOARD ENERGY PROGRAMS

This is a summary of the presentation slides and flip chart notes collected during a CEP workshop held in late 2006 with student groups from the two school boards in Guelph.

The slides summarize electricity and gas usage for each school over a three period. It is clear from this chart that some schools are new and are performing well. The presentation and workshop held with the secondary students from both boards illustrated that the students are active in environmental areas and have many good ideas about moving forward within their own schools. These ideas are also summarized in Table A.1.

Table A.1: Energy Performance Programs and Input from CEP “Planners of the Future” Workshop: Secondary Public Schools of Guelph

Schools	Ideas generated by students
<p>Bishop Macdonell Catholic High School</p>  <p>Contact Details ■ 200 Clair Road ■ (519) 822-8502</p> <p>Total Water Savings over Baseline of 03/04 ■ 7,787 m³</p> <p>Total Utility Costs for 04/05 ■ \$195,649</p>  <p>Copyright: Garforth International llc</p> <p>School Opened in 2003 and is achieving energy use of 197 kWh/m²/yr.</p>	<p>Bishop MacDonnell</p> <ul style="list-style-type: none"> • Power police • one light per class • make use of heat generating roof • Bishop Mac Green Attack • Building design for more windows (windows that open) • fans instead of AC • turn off unused computers • flat roof buildings for solar potential
<p>Centennial CVI</p>  <p>Contact Details ■ 289 College Avenue ■ (519) 821-0360</p> <p>W.I.S.E. undertakings ■ Water – Mar 04 ■ Lighting – Sep 04 ■ Envelope – Sep 04 ■ Boilers – Nov 04 ■ BAS – Jan 05 ■ HVAC – May 05</p> <p>Total Water Savings over Baseline of 02/03 ■ 19,630 m³</p> <p>Total Utility Costs for 04/05 ■ \$278,466</p>  <p>Copyright: Garforth International llc</p>	<p>Not in attendance</p>

City of Guelph Community Energy Plan

College Heights SS



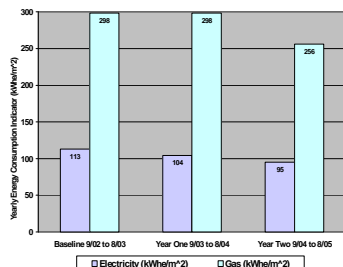
Contact Details
 ■ 371 College Ave W
 ■ (519) 821-4510

W.I.S.E. undertakings
 ■ Water – Mar 04
 ■ BAS – Apr 04
 ■ Envelope – Sep 04
 ■ Lighting – Nov 04

Total Water Savings over
 Baseline of 02/03
 ■ 4,400 m³

Total Utility Costs for 04/05
 ■ \$162,823

Copyright: Garforth International llc



College Heights

- shop classes depend on more energy than other schools
- generate ways to compost waste
- use energy saving lights
- stop people from leaving taps running in the washrooms

Guelph CVI



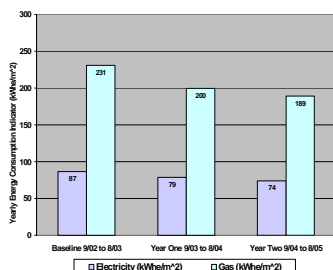
Contact Details
 ■ 155 Paisley Street
 ■ (519) 824-9800

W.I.S.E. undertakings
 ■ Water – Mar 04
 ■ BAS – Apr 04
 ■ Boilers – Sep 04
 ■ Envelope – Sep 04
 ■ HVAC – May 05

Total Water Savings over
 Baseline of 02/03
 ■ 5,439 m³

Total Utility Costs for 04/05
 ■ \$215,948

Copyright: Garforth International llc



Guelph CVI

- efficiency of preparation of café foods i.e. appliances, waste
- continue W.I.S.E.
- reduce lighting use (more use of natural light)
- turn off computer monitors
- turn off classroom lights when not being used
- install “time delay” taps to help reduce the amount of water used daily
- unplug vending machines – always running

John F Ross CVI



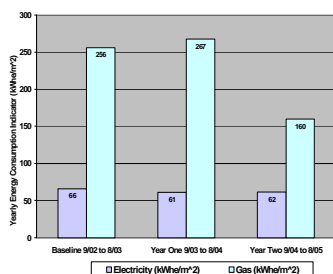
Contact Details
 ■ 21 Meyer Road
 ■ (519) 822-7090

W.I.S.E. undertakings
 ■ Boilers – Jan 04
 ■ Water – Mar 04
 ■ Lighting – Sep 04
 ■ Envelope – Sep 04
 ■ HVAC – May 05
 ■ BAS – Nov 05

Total Water Savings over
 Baseline of 02/03
 ■ 7,935 m³

Total Utility Costs for 04/05
 ■ \$281,876

Copyright: Garforth International llc



John F Ross (two groups)

- low flow toilets
- unplug vending machines
- don't overheat in Winter (better control over heating)
- turn off computers
- turn off lights when not in use (use fewer lights)
- fluorescent light bulbs
- small wind generators/solar panels to supply classrooms
- reduce air conditioning, only use if above 30°C
- geothermal heating underneath football field – goes to school
- recycling programs
- monitor urinals, sensors in washrooms, automatic taps

City of Guelph Community Energy Plan

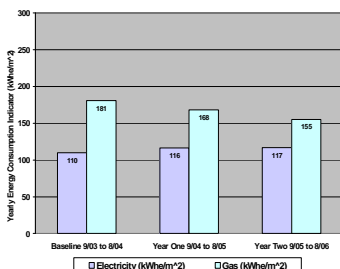
Our Lady of Lourdes Catholic High School



Contact Details
■ 54 Westmount Road
■ (519) 836-2170

Total Water Savings over
Baseline of 03/04
■ **2,370 m³**

Total Utility Costs for 04/05
■ **\$207,143**



Copyright: Garforth International llc

-Mar. '03 – 4,200 m² addition, HVAC upgrade, envelope upgrade

-Jul. '06 – Boiler Replacement

Our Lady of Lourdes

- less light use and turn lights off when not in a room
- reducing heat when no one is present
- timer for heating system
- energy saving light bulbs
- turning off computers when not in use
- less water use for urinals

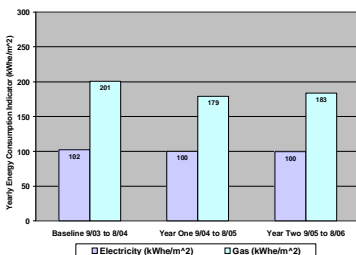
St James Catholic High School



Contact Details
■ 57 Victoria Road
■ (519) 822-4290

Total Water Savings over
Baseline of 03/04
■ **-4,904 m³**

Total Utility Costs for 04/05
■ **\$218,453**



Copyright: Garforth International llc

-Dec. '01 – 2,700 m² addition, HVAC upgrade

-Jul. '06 – Boiler replacement, window replacement, roof replacement

St James

- Water
 - motion sensor flush toilets
- Electricity
 - lights off in empty rooms
 - turn off lights/machines on weekends/holidays
- Heating
 - new windows
 - reduce glass surface
 - reduce temperature settings for nights/weekends/holidays
- Increase existing recycling initiative

The overall energy use indexes are in the range of 225–250 kWh/m²/year, a level that compares well with many jurisdictions around the world, but still has significant room for future reduction. New property or major renovation could be looking at least at 25 to 30% lower than this, with benchmarking against Ontario's own new Building Code, the EU 2007/8 levels of performance and California's latest iteration of Title 24.

City of Guelph Community Energy Plan

APPENDIX 3

ENVIRONMENTAL FEATURES – CIVIC ADMINISTRATION CENTER

The following is a summary of environmental initiatives to be incorporated in the new structure¹¹⁷ in support of the LEED certification of the building.

Alternative Transportation – Showers and bicycle storage to encourage walking and bicycling to work, which could help to reduce fossil fuel consumption, reduce air and water pollutants, and aid in promoting physical fitness and social interaction

Parking Capacity – Minimize motor vehicle parking capacity with only 43 underground parking spaces provided. This will reduce the amount of impermeable hard surfaces that cause Heat Island Effect as well as reducing water pollution from storm water runoff. This also encourages use of public and other forms of transportation.

Light Pollution – Minimize the night time light that will go beyond the property. Not only will this reduce overall energy consumption, reduced night lighting has proven health benefits to neighbors.

Heat Island Effect Reduction – About half of the roof will be “Green Roof” using soil and plants as the top layer of the roof. This reduces heating and cooling needs and storm water runoff, and improves air quality.

Volume Design – Footprint versus vertical height to promote green space use for land.

Low VOC Emitting Materials - Low VOC (volatile organic compounds) emitting carpet, paint and adhesive improves indoor air quality, and improves the health and comfort of occupants.

Living Wall – Using a wall of plants inside the building to filter the air and provide oxygen, provides air filtration, oxygen, and humidification, as well as a more psychologically pleasing working environment.

Building Automation System – This optimizes the amount of fresh air used based on CO₂ levels. This avoids over-ventilation and energy waste.

Humidification – Incorporating a humidification system in the air systems to increase comfort and reduce static electricity

Reduced Water for Irrigation – Landscaping incorporates drought tolerant plants that are also disease and insect resistant. This reduces water consumption for irrigation purposes, as well as improves air quality by not using chemicals for pest and disease control.

Efficient Water Fixtures – Install water conserving plumbing fixtures which will reduce water consumption.

Natural Light – Design allows natural light penetration into interior areas. This reduces energy consumption and creates a more psychologically pleasing working environment.

Free Cooling – Use outside air to cool the building in Spring and Fall when the temperatures allow, reducing energy consumption.

¹¹⁷ City of Guelph Website, New Civic Administration Centre, Environmental Initiatives, <http://guelph.ca/cityhall.cfm?subCatID=1556&smocid=2135>, accessed Dec 2, 2006

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Window Glazing – Use low-E, double glazed windows, with a high quality thermally unbroken frame. This reduces energy consumption, thereby reducing the size of cooling and heating systems.

Equipment Selection – High efficiency chillers, variable volume pumping systems, variable air flow systems, exhaust air heat recovery, occupancy sensors to turn off air flow, high efficiency motors, high efficiency air filtration system, high efficiency boilers, energy efficient light fixtures, energy saving control systems, all contributing to the overall reduction of energy consumption.

Waste Management – Diverting 50% of demolition and construction waste from landfill to recycling plants, reducing waste materials.

Material Selection – The use of recycled materials and minimum 10% local materials helps to reduce construction waste as well as pollution by reducing the transportation of materials to the site. Promotes the use of environmentally friendly materials, and supports the local economy.

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APPENDIX 4

**GHESI 2005 CONSERVATION AND DEMAND MANAGEMENT PROGRAM RESULTS
(NOTE: 2006 RESULTS WILL BECOME AVAILABLE IN MARCH 2007)¹¹⁸**

CD&M Programs	Objective	Cost Benefit Ratio	# Participants or #units	kWh saved over plan	kW Peak demand saved
Education & Promotion	Increase awareness and shift customers to a conservation culture, which is anticipated to result in demand and energy reductions	3.8	7,405	5,181,986	35
Low Income	Provide special consideration for low-income homeowners and low-income tenants who directly pay for their electricity by focusing on their specific energy needs through audits, in partnership with existing local organizations who directly deal with low-income residents, and other organizations such as Natural Resources Canada	12.36	3,433	1,347,604	0
City Leadership	Showcase leadership in the area of CDM via the City of Guelph and Guelph-Eramosa Township, while realizing reductions in demand and energy, for the benefit of the community	1.35	97	732,960	77
Technology & Research	Evaluate technologies to be used as pilot projects in the design of the LDC's new building, for research, development and demonstration purposes. Monitor and track energy gains	2.11	190	11,001,967	108
Air Conditioner Replacement	Educate customers about energy consumption of window air conditioners, and the importance of timers and having the right size room air conditioner. Develop partnerships so that for example, customers could bring their old AC unit back during a designated period of time, and receive a discount on a new Energy-STAR Rated or otherwise qualified model air conditioner.	0.53	27	4,203	4

¹¹⁸ From Guelph Hydro Electric Systems Inc.

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APPENDIX 5**GHEI CONSERVATION AND DEMAND MANAGEMENT PROGRAM
SMART METERING PILOT STARTED IN 2006**

A “Smart Meter” is an advanced electronic electricity meter that records energy usage on an hourly basis, and will allow a consumer to track how much electricity is being used at different times of the day. In 2005 Guelph Hydro reviewed various Smart Metering technology options with a view to undertaking a smart metering pilot project in 2006. The pilot was intended to let Guelph Hydro assess metering, communications, data flow, settlement as well as other business process issues.

A review of various technology options led us to select General Electric meters with Silver Springs Networks wireless networking communications for the pilot. In the summer & fall of 2006 we installed smart meters at 214 electric customers (200 residential customers, 14 small commercial) in the south end of Guelph. Related new secure wireless communications infrastructure (gateways, relays and "backhaul" equipment) were installed as part of the pilot.

The results of the pilot proved that successful daily radio communications for transmitting hourly electricity consumption information were achievable. Late in 2006 GHEI expanded the pilot to include an additional 50 meters utilizing newer more robust wireless communications, and in early 2007 we will be further testing the expanded pilot meters & communications.

In 2007 we will start to generate "shadow bills", and to educate customers on the future Time-of-Use rates that will be used with smart meters interval data. The detailed information captured by the Smart Meter will become an invaluable tool to evaluate energy consumption patterns, and may assist the customer in managing their electricity costs.

Later in 2007 we anticipate the start of smart meter deployment to a larger group of Guelph customers, to ensure that we meet the government's target of smart meters installed at every customer in Ontario by 2010.

Communication from Art Stokman – CEO GHEI January 2007

City of Guelph Community Energy Plan

APPENDIX 6**EXAMPLES OF SCALE PROJECTS**

This Appendix lists some representative scale projects from around the world where selected areas of a city have been developed following different norms from the rest of the surrounding city. In the interest of keeping the document to a reasonable length, the detailed reports have not been included. Further background of these projects can be obtained upon request from Garforth International, llc.

- High density urban villages
 - *Scharnhauser Park, Stuttgart, Germany*
 - *Navy Yard at Noisette, Charleston, South Carolina, USA*
- Industrial estates
 - *Mannheim Island, Mannheim, Germany*
- Greenfield Smart Growth
 - *Bells Landing, Nashville, Tennessee, USA*
- Sports and Recreation Centres
 - *YMCA, Corning, New York, USA*
 - *SAP Stadium, Mannheim, Germany*
- Academic Campuses.
 - *Lakeland Community College, Lake County, Ohio*

APPENDIX 7

PUBLIC FORUM

Below you will find a objectives summary from the large public forum that was held as part of the development phase of the CEP. If you would like a full list of ideas and the public opinion, please go to the following link:

http://www.palmatierproperties.com/Summary_from_CEP_Public_Forum_111606



**COMMUNITY ENERGY
PLANNING**

Community Energy Plan Public Forum Summary

Thursday, November 16, 2006 7pm to 9pm

River Run Centre – Cooperator's Hall

84 participants excluding City Councillors and Consortium Members

Objectives of the workshop:

- An opportunity for residents to listen to international expert Peter Garforth
- First open public forum that allowed for ideas to be generated, shared and community momentum to build
- Examine ideas that could be implemented within participants' local environments such as their home, street, neighbourhood, workplace, school, etc.
- Attempt to build community consensus on project priorities
- To gather future participation feedback
- An opportunity to give some direction/message to the Consortium members

Red dots indicated ideas that participants felt were the least costly to implement.

#of red dots	Idea
14	Education on the issue
2	Rainwater harvesting
2	Collective purchasing of solar power systems
2	Solar hot water heating, training for trades, subsidy programs
9	Increase tree planting
1	Schools or neighbourhood groups sell CFL bulbs vs. choc.bars
2	Better urban planning
5	Bike lanes/community plan
2	Behaviour / changing habits and expectations
2	Solar hot water heating, training for trades, subsidy program
2	Incentives for landlords to make rental properties more efficient
1	Endorse new green building guidelines and standards
5	More energy conservation information on hydro bill
1	Use goats instead of lawnmowers
3	Sliding scale energy use / industrial pays more
3	Change toilet flush to control flush
3	Disbursed city nodes system for the bus system, examine routes
4	Building code improvement for older homes
8	Allow clothesline
2	Neighbourhood garbage collection

APPENDIX 8 – FULL SIZE GRAPHS FOR READABILITY

Figure 3.2 – China's Energy Demand Forecast

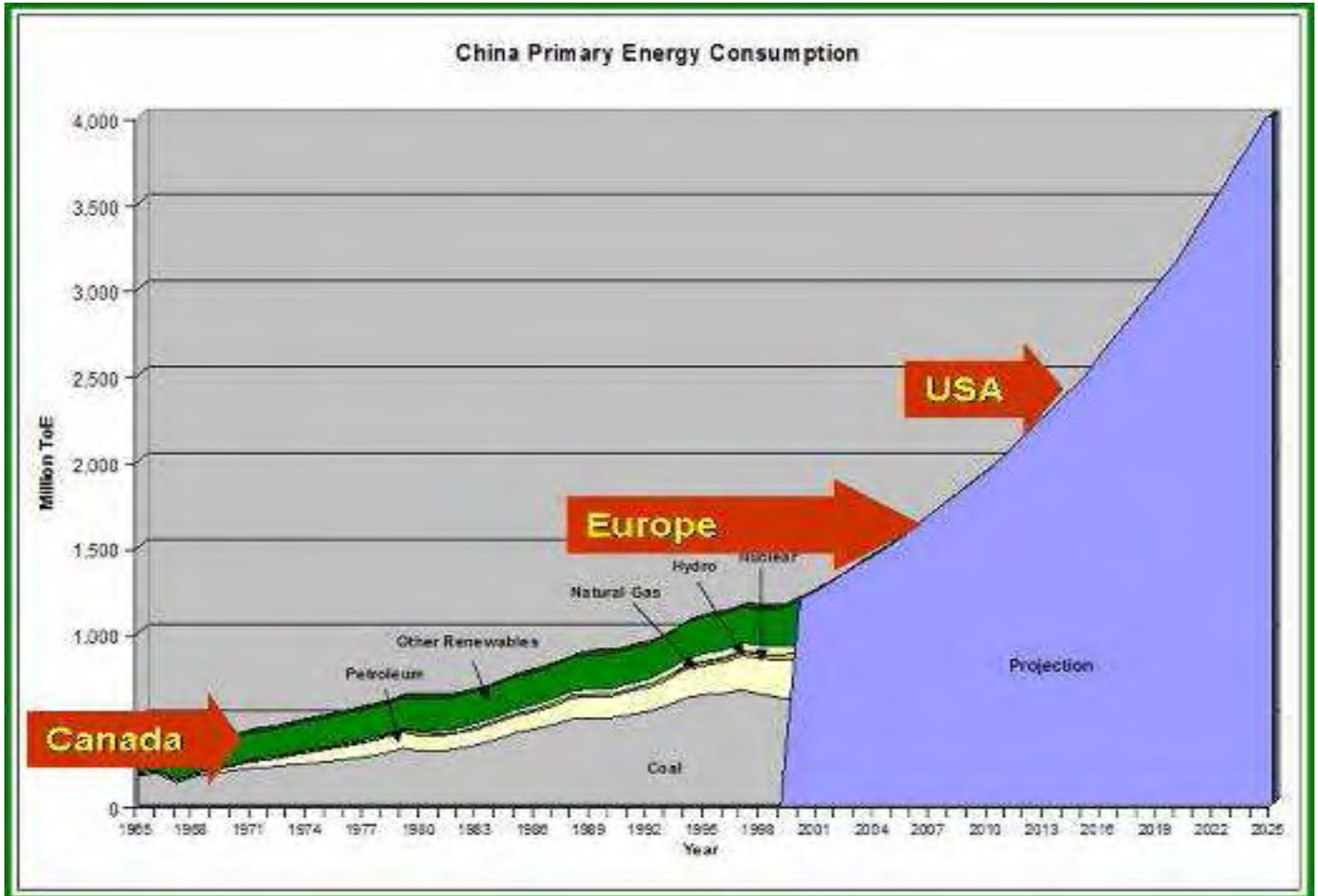
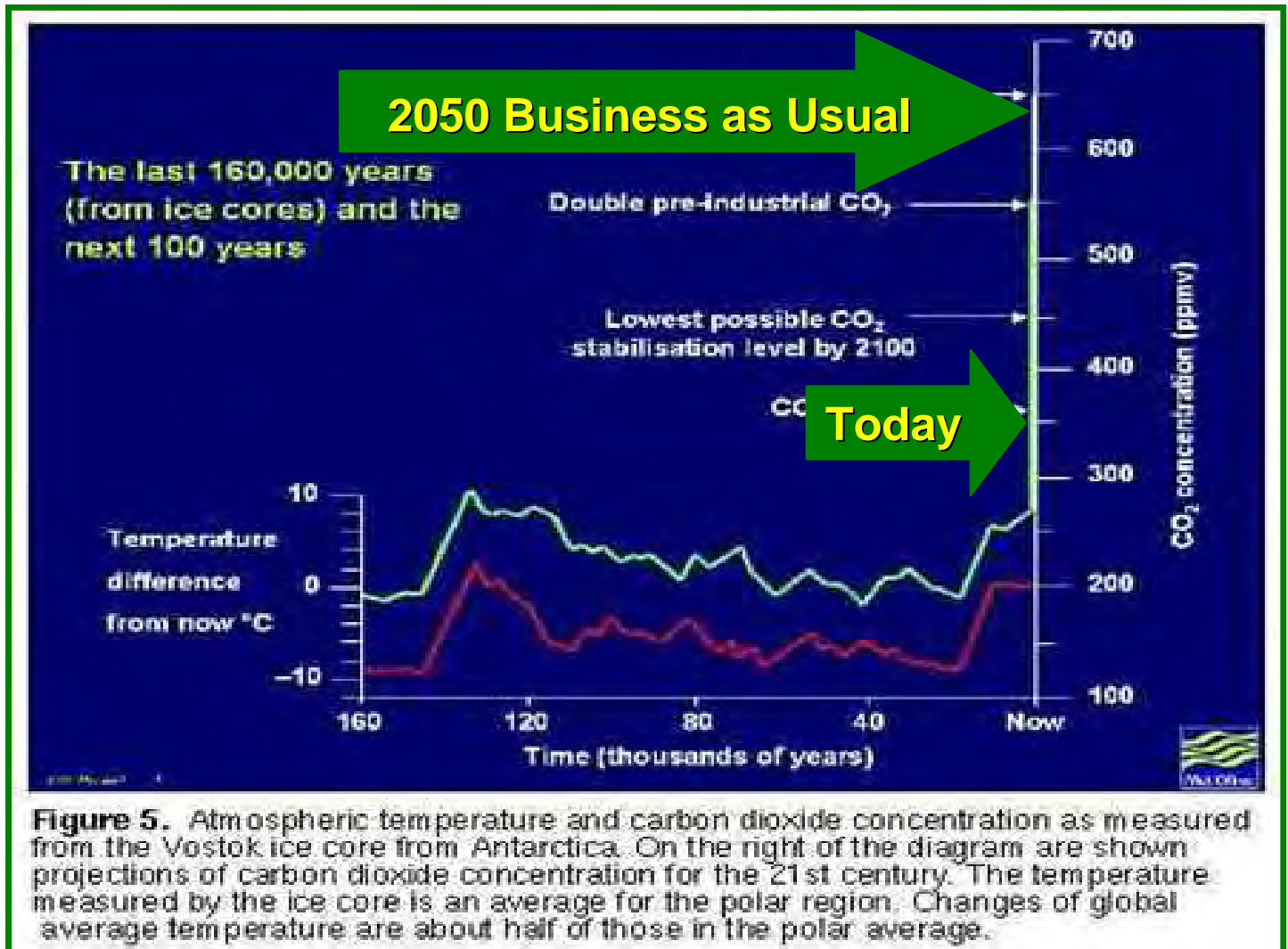


Figure 3.3 Greenhouse Gas and Surface Temperature

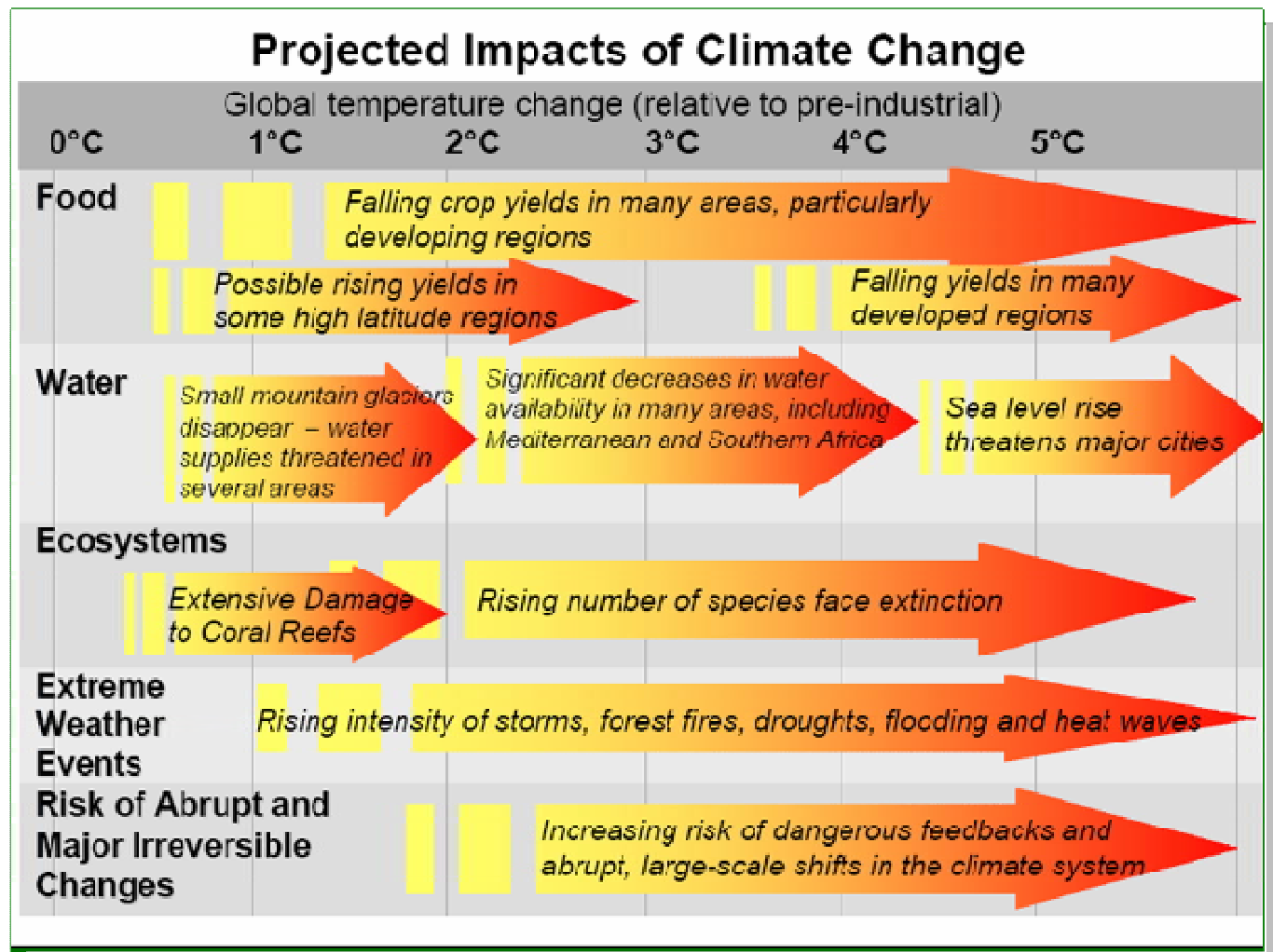
2121 Boshart Way, Toledo, Ohio 43606, USA
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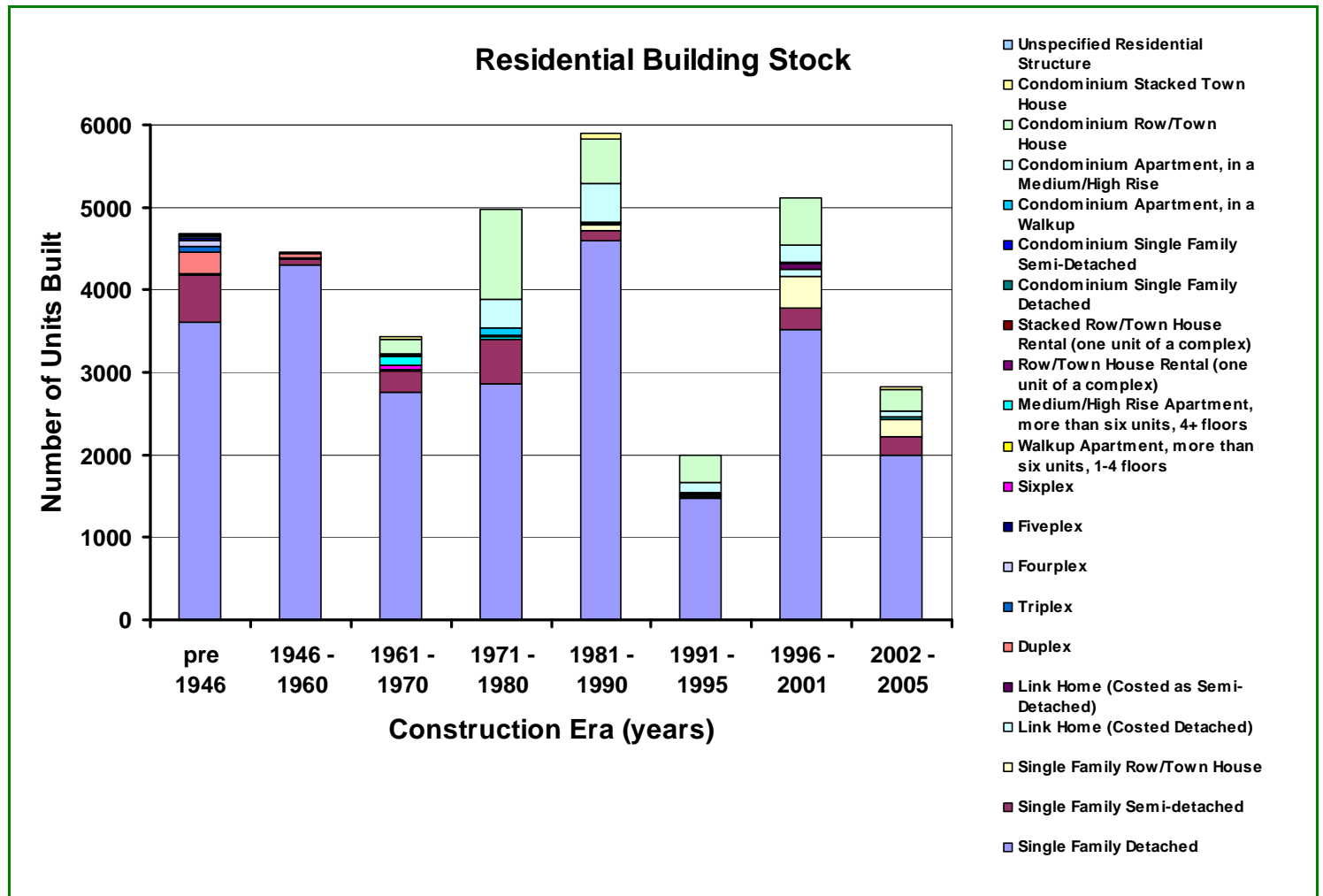
City of Guelph Community Energy Plan

Figure 3.4 Impacts of Global Warming



City of Guelph Community Energy Plan

Figure 6.4 2005 Estimates of Residential Property by Age and Building Type

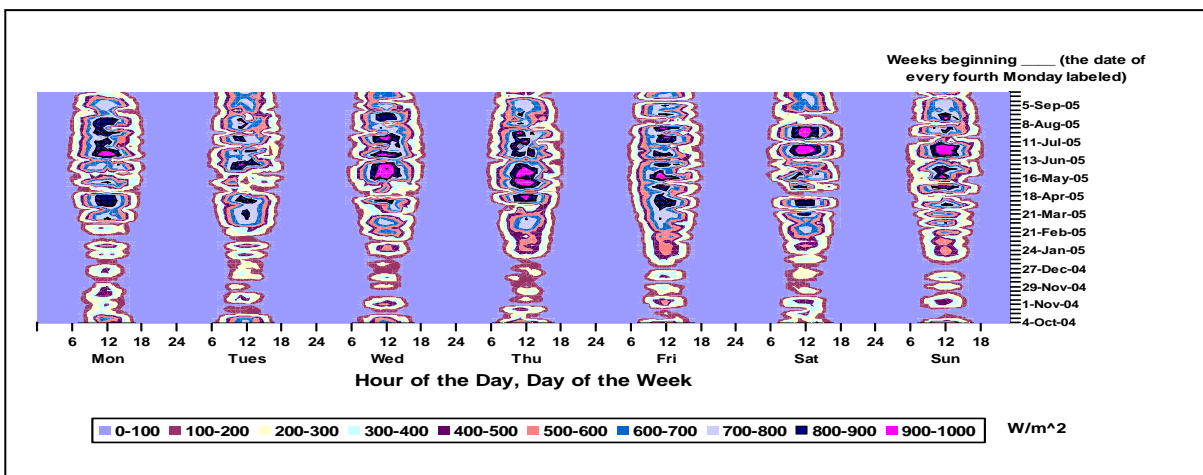


City of Guelph Community Energy Plan

Figure 6.7 Irradiation Data in the Guelph Region (04/05)

Solar Resource

- Figure summarizes data over a one year period with the following points emerging from observation of the data:
 - *global irradiation reaches significant levels, 900-1000 W/m², during spring and summer;*
 - *hours of daylight change significantly over the year;*
 - *global irradiation can be negligible and even non-existent in some months;*
 - *periods of high demand correlate well with global irradiation*



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City of Guelph Community Energy Plan



The Corporation of the City of Guelph
Guelph Water Supply Master Plan

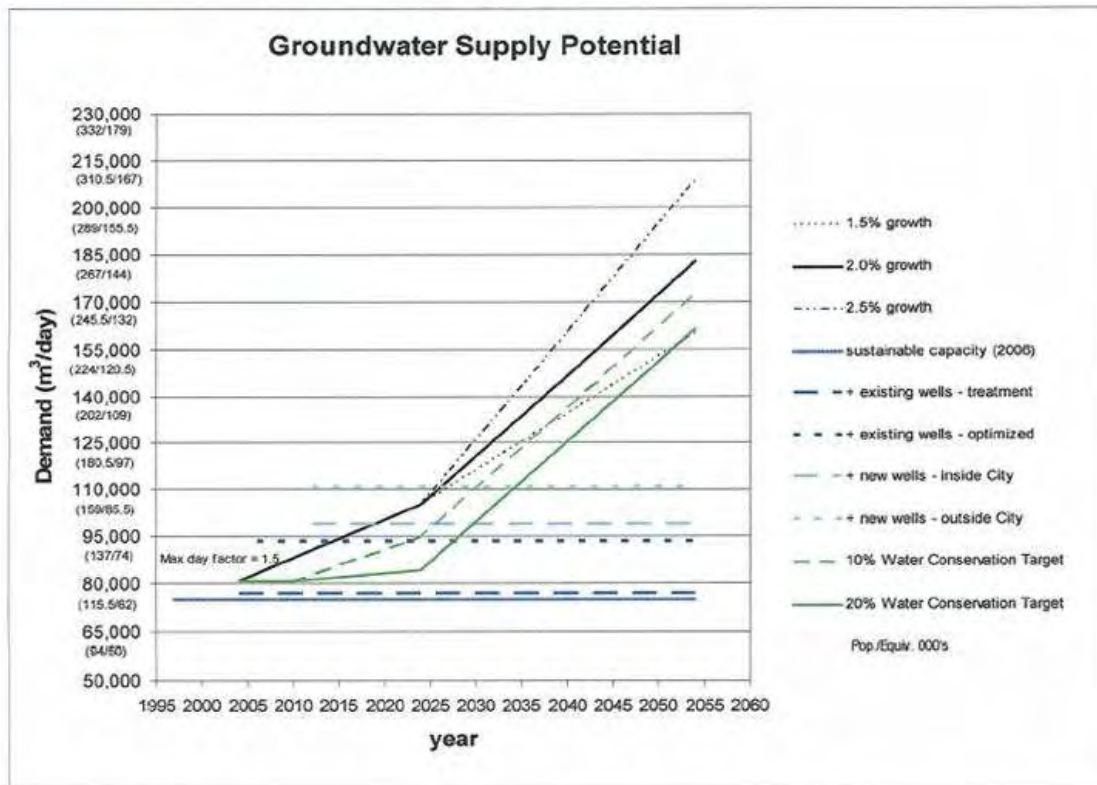
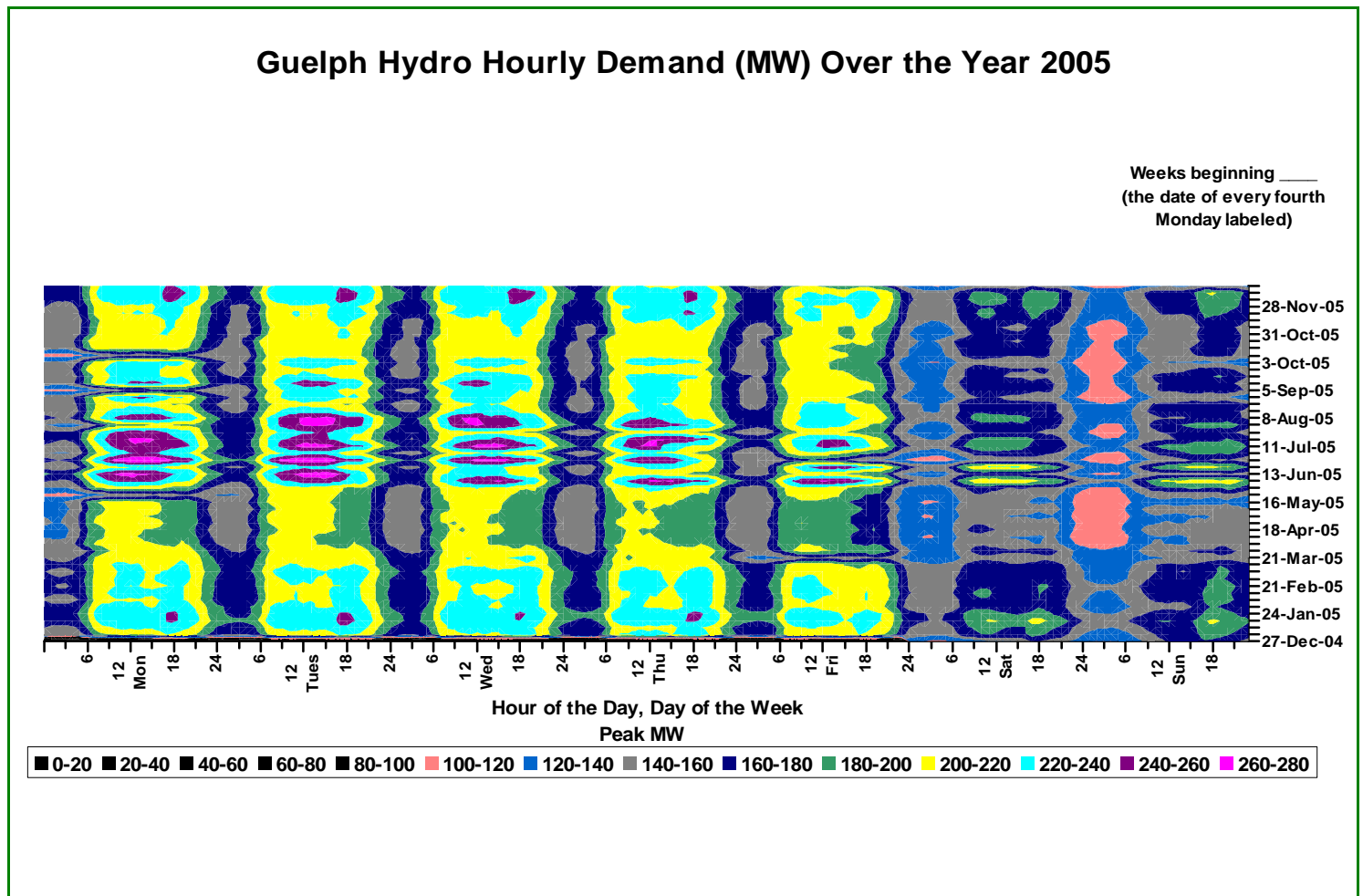



Figure 5.4
Groundwater Supply Potential

City of Guelph Community Energy Plan

Figure 7.18 Hourly Electricity Demand in Guelph for the Year 2005



APPENDIX 8-BUILDING EFFICIENCY LABELING INFORMATION

Building Energy Performance >		As built:	In use:
Certificate type	FULL	Asset Rating	Operational Rating
Building Type	Office		
Whole or part of building	Whole building		
Very energy efficient			
A			
B		B	
C			
D			D
E			
F			
G			
Not energy efficient			
Asset rating method:	UK National Standard 2004	Calculated	Actual
Operational rating method:	UK Office Tailored Benchmarks 2002		
Units used:	kg CO ₂ per sq m of net area per annum >	48	83
Occupancy level	Square metres net lettable area per person	14	12
Equipment heat gain level	Watts per square metre net	12	12
Weekly occupancy hours	Hours per week	55	58
Heating performance ratings		AB CDEFG	AB CDEFG
HVAC performance ratings (cooling, fans and pumps)		AB CDEFG	AB CDEFG
Lighting performance ratings		AB CDEFG	AB CDEFG
Management rating (for in-use performance only)			AB CDEFG
Internal Environmental Quality			Not assessed
Risk level			Not assessed
Further information can be found in the Energy Log Book.			
GB 2005		 Directive 2002/91/EC	

Certifying organisation Street PO Box City Contact Tel email	Building name Organisation Street City Contact Tel email
--	--

Section H: Energy Performance Certificate

100 Any Street,

Any Town,

Anywhere, AB1 CD2

Dwelling type:

Assessment method:

Date of inspection:

Detached

SAP

XXXX

Certificate number:

Date issued:

Name of inspector:

XXXX

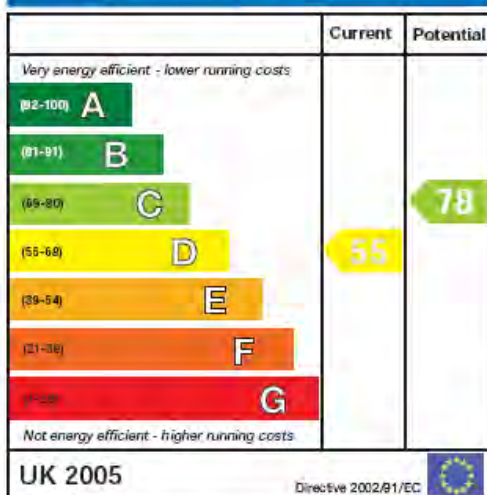
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XXXX

This home's performance ratings

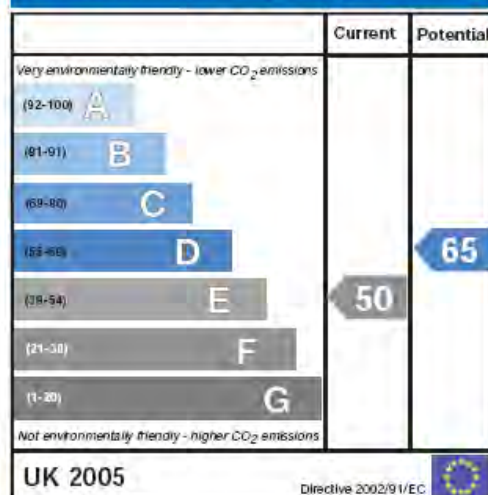
This home has been assessed using the UK's Standard Assessment Procedure (SAP) for dwellings. Its performance is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.

Energy Efficiency Rating



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills will be.

Environmental (CO₂) Impact Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide emissions. The higher the rating the less impact it has on the environment.

Typical energy use, carbon dioxide (CO₂) emissions and fuel costs of this home

This table provides an indication of how much it will cost to provide lighting, heating and hot water to this home. The fuel costs and carbon dioxide emissions are calculated based on a SAP assessment of the energy use. This makes standard assumptions about occupancy, heating patterns and geographical location. The energy use includes the energy used in producing and delivering the fuels to this home. The fuel costs only take into account the cost of fuel and not any associated service, maintenance or safety inspection costs. The costs have been provided for guidance only as it is unlikely they will match actual costs for any particular household.

	Current	Potential
Energy use	xxx kWh/m ² per year	xxx kWh/m ² per year
Carbon dioxide emissions	xx tonnes per year	xx tonnes per year
Lighting	£xxx per year	£xxx per year
Heating	£xxx per year	£xxx per year
Hot water	£xxx per year	£xxx per year

To see how this home can achieve its potential rating please go to page ii

City of Guelph Community Energy Plan

THIS IS AN EXAMPLE REPORT AND IS NOT BASED ON ANY ACTUAL PROPERTY

**Energy Performance Certificate
Report Section**

Certificate number: XXXXXXXXXXXXXXXXXXXX
Date issued: XXXXXXXXXXXXX
Name of inspector: XXXXXXXXXXXXXXXXXXXX

Summary of this home's energy performance related features

The following is an assessment of the key individual elements that have an impact on this home's performance rating. Each element is assessed against the following scale: Very poor/ Poor/ Average/ Good/ Very good

Element	Description	Current performance
Main walls	Uninsulated cavity wall	Poor
Main roof	Pitched, 100mm loft insulation	Average
Main floor	Uninsulated solid concrete (assumed)	Average
Windows	Single glazed throughout	Very poor
Main heating	Mains gas back boiler	Poor
Main heating controls	No controls	Very poor
Secondary heating	Flame effect fire	Very poor
Hot water	From main heating system; uninsulated cylinder	Very poor
Lighting	Low energy lighting in all fixed outlets	Very good

Current energy efficiency rating

D 55

Current environmental impact rating

E 50

Cost effective measures to improve this home's performance ratings

The performance ratings after improvement listed below are cumulative, that is they assume the improvements have been installed in the order that they appear in the table.

Lower cost measures	Typical savings	Performance ratings after improvement	
		Energy efficiency	Environmental impact
Cavity wall insulation	£xx per year	D 65	D 56
Loft insulation top up to 250mm	£xx per year	D 68	D 57
Hot water cylinder and pipe work insulation	£xx per year	C 69	D 58
	Sub-total £xx per year		
Higher cost measures			
Condensing boiler	£xx per year	C 75	D 63
Installation of a full heating controls package	£xx per year	C 78	D 65
	Total £xx per year		

Potential energy efficiency rating

C 78

Potential environmental impact rating

D 65

Further measures to achieve even higher standards

The further measures listed below should be considered in addition to those already specified if aiming for the highest possible standards for this home.

Double glazing	£xx per year	C 80	D 67
Solar water heating	£xx per year	B 81	D 68

Enhanced energy efficiency rating

B 81

Enhanced environmental impact rating

D 68

Improvements to the energy efficiency and environmental impact ratings will usually be in step with each other. However, they can sometimes diverge because reduced energy costs are not always accompanied by reduced carbon dioxide emissions.

For advice on how to take action and to find out about offers available to help make your home more energy efficient call 0800 512 012 or visit www.est.org.uk/myhome

City of Guelph Community Energy Plan

THIS IS AN EXAMPLE REPORT AND IS NOT BASED ON AN ACTUAL PROPERTY

Energy Performance Certificate Report Section

Certificate number: X/000/000/000/000/000/000
Date issued: X/000/000/000/000/000
Name of Inspector: X/000/000/000/000/000/000

Measures to improve this home's performance ratings

Lower cost measures (typically up to £500 each)

These measures are relatively inexpensive to install and are worth tackling first. Some of them may be installed as DIY projects. DIY is not always straightforward, and sometimes there are health and safety risks, so take advice from an energy advisor before carrying out DIY improvements.

Measure 1: Cavity wall insulation

The external walls of this home are built with a gap, called a cavity, between the inside and outside layers of the wall. Cavity wall insulation fills this gap with an insulating material, which reduces heat loss through the external walls. The insulation material is pumped into the gap through small holes that are drilled into the outer walls; the holes are made good afterwards. As specialist machinery is used to fill the cavity a professional installation company should carry out this work. Such 'approved contractors' should carry out a thorough survey before commencing work to be sure that this type of insulation is right for this home. They should also provide a guarantee for the work and handle any building control issues.

Measure 2: Loft insulation

Insulation laid in the roof space over the joists or between roof rafters to a depth of at least 250 mm will significantly reduce heat loss through the roof. The anticipated cost is based upon a contractor installing or making up the loft insulation to the equivalent of a 250mm quilt; although the insulation can also be installed by a capable DIY enthusiast. Loose granules may be used instead of insulation quilt; this form of loft insulation can be blown into place and can be useful where access is difficult.

Measure 3: Hot water cylinder and pipe insulation

This is a partially or fully formed insulation that fits around the hot water cylinder. Installing this, or increasing the thickness of existing insulation, around the hot water cylinder will help to reduce fuel bills. The jacket should be fitted over the top of any existing insulation and over any thermostat clamped to the cylinder. Hot water pipes from the hot water cylinder should also be insulated, using preformed pipe insulation of 50mm thickness, for as far as they can be accessed. All these materials can be purchased from DIY stores and installed by a competent DIY enthusiast.

Higher cost measures (typically over £500 each)

Measure 4: Condensing boiler

A condensing boiler is capable of much higher efficiencies than other types of boiler, meaning it will burn less fuel to heat the property. This improvement is most appropriate when the existing heating system needs repair or replacement. Only a qualified, CORGI registered heating engineer should carry out the installation. Building Regulations apply to this work, so it's a good idea to get advice from the local Building Control Authority.

Measure 5: Installation of full heating controls package

The heating system requires a programmer and room thermostat to be fitted to ensure the boiler switches off when no heat is required. Thermostatic radiator valves are a useful addition to the room thermostat, allowing the temperature of each room to be controlled to suit individual needs, adding to comfort and reducing heating bills - for example, they can be set to be warmer in the living room and bathroom than in the bedrooms. Ask a competent heating engineer (e.g. CORGI registered) to install radiator valves and a fully-pumped system with the pump and the boiler turned off by the room thermostat. Radiator Valves should be fitted to every radiator except one - the radiator in the same room as the room thermostat. Remember you still need the room thermostat to ensure the boiler switches off when no heat is required.

Further measures to achieve an even higher standard

The further measures listed below should be considered in addition to those already specified if aiming for the highest possible standards for this home.

Measure 6: Double glazing

Double glazing is the term given to a system where two panes of glass are made up into a sealed unit. Replacing existing single glazed windows with double-glazing will improve comfort in the home by reducing draughts and cold spots near windows. Double glazed windows may also reduce noise, improve security and combat problems with condensation. Building Regulations apply to this work, so either use a contractor who is registered with FENSA or obtain advice from the local Building Control Authority.

Measure 7: Solar water heating

A thermal panel, usually fixed to the roof, uses the sun to pre-heat the hot water supply. This will significantly reduce the demand on the heating system to provide hot water and hence save fuel and money. These panels are among the most cost effective renewable systems that can be installed on dwellings in urban or rural environments. The Solar Trade Association has up to date information on installers in your area and any grant that may be available.



Remember to look for the energy saving recommended logo when buying energy efficient products. It's a quick and easy way to identify the most energy efficient products on the market. For advice on how to take action and to find out about offers available to help make your home more energy efficient call 0800 512 012 or visit www.est.org.uk/myhome

City of Guelph Community Energy Plan

Energy Performance Certificate Report Section

Certificate number: XXXXXXXXXXXXXXXXXXXX
Date issued: XXXXXXXXXXXXXXXX
Name of inspector: XXXXXXXXXXXXXXXXXXXX

About this energy inspection

Energy inspections are not new and they have been available in the UK since the late 1980s. This inspection has been undertaken by a qualified inspector who has received appropriate training to collect the correct information about the energy performance of homes. This information has been processed by a Government approved organisation to produce the energy performance certificate and the recommendations for improvements in this report. Both the inspector and the energy performance certificate supplier are regularly monitored to ensure that their work is up to standard.

For clarification of the technical information in this energy performance certificate please contact:

Inspector on

About this home's performance ratings

The ratings provide a measure of the overall energy efficiency of this home and its environmental impact. Both are calculated using the Standard Assessment Procedure (SAP), which is the Government's recommended system for assessing the energy performance of dwellings. The ratings take into account the home's insulation, heating systems, hot water system, fixed lighting, ventilation, number of windows and fuels used.

Not all of us use our homes in the same way so to allow one home to be directly compared to another, energy ratings are calculated using 'standard occupancy' assumptions. Standard occupancy is based on a home in a central UK location and assumes that during the heating season the house is heated for 9 hours a day during weekdays and 16 hours a day at weekends, with the living room heated to 21°C and the rest of the house at 18°C.

The ratings are expressed on a scale of 1 to 100. The higher the energy efficiency rating the more energy efficient the home and the higher the environmental impact rating the less impact it has on the environment.

Homes which are more energy efficient use less energy, saving money and helping to protect the environment. The cost of providing lighting, heating and hot water to a home with an energy efficiency rating of 100 would be practically zero. Similarly the carbon dioxide emissions from lighting, heating and hot water for a home with an environmental impact rating of 100 would be practically zero.

The potential ratings shown on page one describe the energy performance of the home assuming all cost effective measures have been installed. For comparison a home built to the 2006 Building Regulations would typically be around the boundary of bands B and C.

This home's impact on the environment

Carbon dioxide is one of the biggest contributors to the man-made greenhouse effect. We all use energy every day – at home, at work and when we travel. To generate that energy, we burn fossil fuels (coal, oil and gas) that produce 'greenhouse' gases – particularly carbon dioxide – which are changing our climate and damaging the environment. The energy we use for heating, lighting and power in our homes produces over a quarter of the UK's carbon dioxide emissions.

The average household in the UK creates about six tonnes of carbon dioxide every year. There are simple steps you can take to cut carbon dioxide emissions and help prevent climate change. Making your home more energy efficient by adopting the suggestions in this report can help protect the environment by reducing carbon dioxide emissions. You could reduce your emissions even more by switching to renewable energy sources.

What can I do today?

In addition to the specific measures suggested in this report, don't forget there are many simple measures you can put into action today that will save you money, help reduce your impact on the environment and improve the comfort of your home.

For example:

- Check that your heating system thermostat is not set too high (21°C in the living room is suggested) and use the timer or programmer to ensure you only heat your home when necessary.
- Make sure your hot water is not too hot. Your cylinder thermostat shouldn't need to be set higher than 60°C/140°F.
- Turn off lights when not needed and do not leave appliances on standby. Remember not to leave chargers (e.g. for mobile phones) turned on when you are not using them.
- Buy energy saving recommended appliances. Remember to look for the energy saving recommended logo when buying.



Remember to look for the energy saving recommended logo when buying energy efficient products. It's a quick and easy way to identify the most energy efficient products on the market. For advice on how to take action and to find out about offers available to help make your home more energy efficient call 0800 512 012 or visit www.est.org.uk/myhome

This is Exhibit "1", Tab "3", Schedule "2" referred to in the
Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of
Guelph, in the Regional Municipality of Wellington, before me at
the City of Toronto, in the Province of Ontario, on June 27, 2025
in accordance with O. Reg. 431/20, Administering Oath or
Declaration Remotely.



Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3

Schedule 2

**Minutes of Guelph City Council
Held in the Council Chambers, Guelph City Hall on
May 28, 2018 at 4:34 p.m.**

Attendance

Council: Mayor C. Guthrie
Councillor P. Allt
Councillor C. Billings
Councillor C. Downer
Councillor J. Gordon
Councillor J. Hofland
Councillor M. MacKinnon
Councillor M. Salisbury
Councillor K. Wettstein

Absent: Councillor B. Bell
Councillor D. Gibson
Councillor L. Piper
Councillor A. Van Hellemond

Staff: Mr. S. O'Brien, City Clerk
Ms. D. Black, Council Committee Coordinator

Call to Order (4:34 p.m.)

Mayor Guthrie called the meeting to order.

Authority to Resolve into a Closed Meeting of Council

1. Moved by Councillor Allt
Seconded by Councillor Downer

That the Council of the City of Guelph now hold a meeting that is closed to the public, pursuant to Section 239 (2) (b), (c), (d), (e), (f), (i) and (k) of the Municipal Act with respect to: personal matters about an identifiable individual, including municipal or local board employees; a proposed or pending acquisition or disposition of land by the municipality or local board; labour relations or employee negotiations; litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local board; advice that is subject to solicitor-client privilege, including communications necessary for that purpose; a trade secret or scientific, technical, commercial, financial or labour relations information, supplied in confidence to the municipality or local board, which, if disclosed, could reasonably be expected to prejudice significantly the competitive position or interfere significantly with the contractual or other negotiations of a person, group of persons, or organization; and a position, plan, procedure, criteria or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipality or local board.

Carried

Closed Meeting (4:37 p.m.)

Disclosure of Pecuniary Interest and General Nature Thereof

There were no disclosures.

The following matters were considered:

	Adoption of Minutes of the Closed Meeting of Council held April 23, 2018
	Downtown Guelph Business Association Board of Directors Appointment
CAO-2018.13	Employee Code of Conduct Breach
IDE-2018.73	Land Sale Transaction for 200 Hanlon Creek Blvd. between 785412 Ontario Ltd. (Everest Holdings) and the Ontario Federation of Agriculture (OFA)
IDE-2018.81	Solid Waste Resources Business Service Review Final Report – Confidential Material Recovery Facility Update
CAO-2018.14	Potential Disposition of Real Property in the Downtown
PS-2018.23	Contract for Animal Control and Pound Services

Rise and recess from Closed Meeting (6:00 p.m.)

Council recessed.

Open Meeting (6:32 p.m.)

Mayor Guthrie called the meeting to order.

Closed Meeting Summary

Mayor Guthrie spoke regarding the matters addressed in closed and identified the following:

Minutes –	Council Closed Session – April 23, 2018 These minutes were adopted by Council.
	Downtown Guelph Business Association Board of Directors Appointment Information was received and Council will report on this matter.
CAO-2018.13	Employee Code of Conduct Breach Information was received and no direction was given.
IDE-2018.73	Land Sale Transaction for 200 Hanlon Creek Blvd. between 785412 Ontario Ltd. (Everest Holdings) and the Ontario Federation of Agriculture (OFA) Information was received and no direction was given.
IDE-2018.81	Solid Waste Resources Business Service Review Final Report – Confidential Material Recovery Facility Update Information was received and no direction was given.
CAO-2018.14	Potential Disposition of Real Property in the Downtown Information was received and Council will report on this matter.

PS-2018.23

Contract for Animal Control and Pound Services

Staff were given direction on this matter.

Disclosure of Pecuniary Interest and General Nature Thereof

Councillor MacKinnon declared a pecuniary interest regarding the Downtown Guelph Business Association Board of Directors Appointment and Report IDE-2018.69 Downtown Parking Master Plan Update because he is a business owner within the downtown core.

Presentations:

2018 Access Recognition Awards

Julie Goodwin, Guelph Barrier Free Committees, Committee Member, provided details regarding each award and the following 2018 Access Recognition awards were presented by the Mayor

- Outstanding Accomplishment of an Individual: Millar Weddig
- Outstanding Contribution of an Individual: Grante Leemet and Limitless Guelph
- Outstanding Contribution of an Individual: Josh Cassidy
- Outstanding Contribution of a Business: Guelph Public Library – Outreach Services

Confirmation of Minutes

2. Moved by Councillor Gordon
Seconded by Councillor Hofland

That the minutes of the Council Meetings held April 9, 18, and 23, 2018 and the Committee of the Whole meetings held May 7, 2018 be confirmed as recorded and without being read.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

Committee of the Whole and Council Consent Reports

The following items were extracted:

IDE-2018.69	Renewable Sources of Energy
	Downtown Parking Master Plan Update
	Red Light Cameras
IDE-2018-74	Land Sale Transaction for 200 Hanlon Creek Blvd.
	between 785412 Ontario Ltd. (Everest Holdings) and the
	Ontario Federation of Agriculture (OFA)

Balance of Committee of the Whole and Council Consent Items

3. Moved by Councillor Billings
Seconded by Councillor Downer

That the balance of the, 2018 Committee of the Whole and Council Consent Reports as identified below, be adopted:

IDE-2018.58 2017 Building Permit Revenue and Expenditures, Building Stabilization Reserve Fund and Annual Setting of Building Permit Fees

That Council approve the recommended building permit fees, included as Attachment 2, report IDE-2018-58 titled "2017 Building Permit Revenue and Expenditures, Building Stabilization Reserve Fund and Annual Setting of Building Permit Fees" dated May 7, 2018, effective June 1, 2018.

IDE-2018.38 139 Morris Street Brownfield Tax Increment Based Grant Deadline Extension

1. That the request to extend the deadline for project completion for the Brownfield Tax Increment Based Grant applying to 139 Morris Street from October 28, 2018 to April 28, 2021 be approved.
2. That staff be directed to prepare an amendment to the Tax Increment Based Grant Agreement between the City and 139 Morris Street Ltd., to the satisfaction of the General Manager of Planning, Urban Design and Building Services, the City Solicitor and the City Treasurer.
3. That the Mayor and Clerk be authorized to execute the amendment to the Tax Increment Based Grant Agreement.

IDE-2018.62 Sign By-law Variances – 1515 Gordon Street

That the request for variances from Sign By-law Number (1996)-15245, as amended, to permit an illuminated freestanding sign to have a sign area of 4.53m² and a height of 4.65m above the adjacent roadway at 1515 Gordon Street, be approved.

IDE-2018.56 Community Energy Initiative Update

1. That Council acknowledge the role of Our Energy Guelph (OEG) as the implementer of the Community Energy Initiative going forward in principle.
2. That Council approve the City of Guelph's continued association with OEG as a primary stakeholder and partner.
3. That Council acknowledge the target that OEG has proposed, namely for Guelph to become net zero carbon by 2050.

4. That Council direct staff to provide a report in Q1 of 2019 with specific corporate targets for GHG emissions and energy consumption taking into consideration the findings from the CEI update for council approval.
5. That Council direct staff to provide a detailed report recommending specific initiatives that are aligned with the CEI update, complete with business cases to support those initiatives, to be considered as part of the 2019 operating and capital budget process for Council approval.

IDE-2018.68 Asset Management Program Progress and Policy Update

1. That the report "Asset Management Program Progress and Policy Update," dated May 7, 2018, be received and that staff be directed to proceed with the work plan as outlined.
2. That Council approve the updated 2018 Strategic Asset Management Policy.

CS-2018.14 2017 Operating Variance Report and Surplus and Deficit Allocation

1. That the report titled "2017 Operating Variance Report and Surplus and Deficit Allocation", dated May 7, 2018, be received.
2. That the Tax Supported surplus of \$3,546,195 be allocated to the reserves and reserve funds as follows:

Tax Rate Operating Contingency Reserve (180)	\$1,064,826
City-owned Contaminated Sites Reserve Fund (155)	\$1,000,000
Efficiency, Innovation and Opportunity Fund (351)	\$1,000,000
WSIB Reserve (330)	\$231,369
Police Operating Contingency Reserve (115)	\$150,000
Affordable Housing	\$100,000
Total	\$3,546,195

3. That the Water Services surplus of \$745,149 be allocated to the Water Capital Reserve Fund (152).
4. That the Wastewater Services surplus of \$2,636,206 be allocated to the Wastewater Capital Reserve Fund (153).
5. That the Stormwater Services surplus of \$971,110 be allocated as follows:

Stormwater Contingency Reserve (359)	\$321,900
Stormwater Capital Reserve Fund (165)	\$649,210
Total	\$971,110

6. That the Ontario Building Code (OBC) deficit of \$35,319 be funded from the Building Services OBC Stabilization Reserve Fund (188).

7. That the Court Services deficit of \$51,680 be funded from the Court Contingency Reserve (211).

CS-2018.16 2017 Reserve and Reserve Fund Statement

1. That the City's General Reserve and Reserve Fund Policy be amended to reflect the following as at December 31, 2017:
 - a. The addition of the Paramedic Services Provincial Capital Reserve Fund (360);
 - b. The consolidation of the Police Equipment Reserve Fund (115) into the Police Capital Reserve Fund (158);
 - c. The repurposing of the Police Equipment Reserve Fund (115) to a Police Operating Contingency Reserve; and
 - d. The addition of the Library Operating Contingency Reserve (102).
2. That effective January 1, 2018, the Transportation Demand Management Reserve Fund (350) and the Information Technology Reserve Fund (210) be closed and removed from the General Reserve and Reserve Fund Policy.
3. That \$813,053 be transferred from Compensation Contingency Reserve (131) to the WSIB Reserve (330) to align these reserves with the targets identified in the General Reserve and Reserve Fund Policy.
4. That the Waterworks Capital Reserve Fund (152) and the Waterworks Contingency Reserve (181) be renamed Water Capital Reserve Fund (152) and Water Contingency Reserve (181).

CS-2018-49 Delegation of Authority for the Period of Restricted Acts after Nomination Day for the 2018 Municipal Election

That a by-law be enacted to delegate authority to the Chief Administrative Officer in the event of a Restricted Acts Period, or Lame Duck Council, in accordance with ATT-1 to Report CS-2018-49, dated June 5, 2018.

CS-2018-50 Municipal Election Compliance Audit Committee

1. That a joint Municipal Election Compliance Audit Committee be established for the 2018-2022 term of Council in accordance with the draft Terms of Reference in ATT-1 to report CR-2018-50, 2018-2022 Municipal Election Compliance Audit Committee.
2. That the Clerk be delegated authority to select and appoint Committee Members and that Council be advised of the appointments by way of an Information Report once members have been selected.
3. That the Clerk be delegated authority to revise the Terms of Reference throughout the term of the Committee in accordance with other participating municipalities.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

Items for Discussion

Red Light Cameras

4. Moved by Councillor Downer
Seconded by Councillor Allt

That staff, in consultation with Guelph Police Services, be directed to investigate the process to implement Red Light Cameras in the City of Guelph which would include, but not be limited to, capital and operational costs including a public communications plan and a recommendation regarding the use of red light cameras as is applicable to the City of Guelph based upon a review and assessment of intersection collisions and report back to Council in early Q1 2019.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (10)

Voting Against: Councillor Gibson (1)

Carried

IDE-2018-12 Solid Waste Resources Business Service Review Final Report

Presentation:

Scott Stewart, Deputy CAO, Infrastructure, Development and Enterprise provided introductory remarks regarding the Solid Waste Resources Business Service Review Final Report.

Katherine Gray, Program Manager, Business Process Management explained the five phases of the review.

Cam Walsh, Divisional Manager, Solid Waste Resources explained the eleven recommendations within the report.

Katherine Gray, Program Manager, Business Process Management summarized the key impacts and advised of next steps.

Busatto, General Manager, Environmental Services advised that the review has fulfilled its purpose and staff have gained valuable knowledge from the review to move forward productively.

The following delegation spoke to this item:

Paul Clulow, President CUPE 241, City of Guelph

5. Moved by Councillor Hofland
Seconded by Councillor Piper

That the report IDE-2018-12 "Solid Waste Resources Business Service Final Report" dated May 28, 2018, be received and that staff be directed to proceed with the implementation of the recommendations.

Amendment

6. Moved by Councillor Billings
Seconded by Councillor Piper

That where there are financial implications, they be identified in the budget process as outlined in the report for Council approval.

Voting in Favour: Mayor Guthrie, Councillors Billings, Gibson, MacKinnon and Piper (5)

Voting Against: Councillors Allt, Downer, Gordon, Hofland, Salisbury and Wettstein (6)

Defeated

Main Motion

7. Moved by Councillor Hofland
Seconded by Councillor Piper

That the report IDE-2018-12 "Solid Waste Resources Business Service Final Report" dated May 28, 2018, be received and that staff be directed to proceed with the implementation of the recommendations.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

The meeting recessed at 8:05 and resumed at 8:15 p.m

Special Resolution:

8. Moved by Councillor Gibson
Seconded by Wettstein

That the report IDE-2018-12 "Solid Waste Resources Business Service Final Report" dated May 28, 2018, be received and that staff be directed to proceed with the implementation of the recommendations.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

PS-2018.22 Guelph Transit – Route 3

The following delegations spoke to this item:

Trevor Price
Melissa Otter and Sian Matway
Justin Staines
Steven Petric

9. Moved by Councillor Hofland
 Seconded by Councillor Allt

That as of September 3, 2018 staff be directed to revert Route 3 service levels back to the September 2017 schedule and that the operating impact for 2018 be funded from the Tax Rate Operating Contingency Reserve.

Voting in Favour: Councillors Allt, Downer, Gordon, Hofland, Piper, Salisbury and Wettstein (7)

Voting Against: Mayor Guthrie, Councillors Billings, Gibson and MacKinnon (4)

Carried

Renewable Sources of Energy

10. Moved by Councillor Piper
 Seconded by Councillor Hofland

1. That the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Amendment

11. Moved by Councillor Gibson
 Seconded by Councillor Billings

1. **As it aligns with long-term Provincial energy planning,** that the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Point of Order

Councillor Allt raised a point of order regarding whether comments being made by Councilor Gibson were pertinent to the subject matter and the Mayor ruled the comments were appropriate.

Amendment

12. Moved by Councillor Gibson
Seconded by Councillor Billings

1. **As it aligns with long-term Provincial energy planning**, that the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Voting in Favour: Mayor Guthrie, Councillors Billings, Gibson and MacKinnon (4)

Voting Against: Councillors Allt, Downer, Gordon, Hofland, Piper, Salisbury and Wettstein (7)

Defeated

Main Motion

13. Moved by Councillor Piper
Seconded by Councillor Hofland

1. That the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

IDE-2018.69

Downtown Parking Master Plan Update

Councillor MacKinnon did not speak or vote on this matter due to his declared pecuniary interest.

14. Moved by Councillor Downer
Seconded by Councillor Hofland

1. That a Downtown Parking Committee consisting of representatives from business, community groups, residents and City staff be implemented to discuss and review downtown parking programs.
2. That staff be directed to use Alternative C within report IDE-2018.69 Downtown Parking Master Plan Update (blended tax and fee support) as the funding model with a review to be conducted in five years.

Amendment

15. Moved by Councillor Wettstein
Seconded by Councillor Gibson

1. That a Downtown Parking Committee consisting of representatives from business, community groups, residents and City staff be implemented to discuss and review downtown parking programs.
2. That staff be directed to use Alternative C within report IDE-2018.69 Downtown Parking Master Plan Update (blended tax and fee support) as the funding model with a review to be conducted **within** five years.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

Main Motion as Amended

It was requested that the clauses be voted on separately.

16. Moved by Councillor Wettstein
Seconded by Councillor Gibson

That a Downtown Parking Committee consisting of representatives from business, community groups, residents and City staff be implemented to discuss and review downtown parking programs.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

17. Moved by Councillor Wettstein
Seconded by Councillor Gibson

That staff be directed to use Alternative C within report IDE-2018.69 Downtown Parking Master Plan Update (blended tax and fee support) as the funding model with a review to be conducted within five years.

Voting in Favour: Mayor Guthrie, Councillors Allt, Downer, Gordon, Hofland, Piper and Wettstein (7)

Voting Against: Councillors Billings, Gibson and Salisbury (3)

Carried

Councillor Mark MacKinnon Request for Additional Training Funding to Attend AMO August 19-22, 2018.

Councillor MacKinnon declared a pecuniary interest and did not speak or vote on this amendment.

18. Moved by Councillor Hofland
Seconded by Councillor Gordon

That Councillor MacKinnon be authorized to exceed his 2018 funding allocation in the amount of \$3, 250.00 in the amount of \$1,500.00 in order to attend the AMO 2018 conference in Ottawa, august 19-22, 2018.

Voting in Favour: Mayor Guthrie, Councillors Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (9)

Voting Against: Councillor Allt (1)

Carried

**IDE-2018-74 Land Sale Transaction for 200 Hanlon Creek Blvd.
between 785412 Ontario Ltd. (Everest Holdings) and the
Ontario Federation of Agriculture (OFA)**

19. Moved by Councillor Billings
Seconded by Councillor Gibson

1. That the City's Option to Repurchase registered November 28th, 2014 as Instrument No. WC420339 agreed to in the Agreement of Purchase and Sale between the City and 785412 Ontario Ltd. (Everest Holdings) for a property at 200 Hanlon Creek Boulevard, be waived in order to permit the sale of these lands to the Ontario Federation of Agriculture (OFA).
2. That the terms of Option to Repurchase condition in effect against OFA be revised in order to extend the Start Construction deadline to June 2019 and the expiration date to June 2022.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

Two-Way All-Day GO Rail Service and High Speed Rail to Waterloo Region

20. Moved by Councillor Billings
Seconded by Councillor MacKinnon

1. That the City of Guelph calls upon all political parties at the provincial and federal levels governments to remain committed on both Two-Way All-Day GO rail service from Toronto to Waterloo region by 2024 and to move forward to bring Canada's first High Speed Rail line from Toronto to London in 2025.
2. That a copy of the resolution be sent to the Prime Minister of Canada, leaders of the Ontario Liberal Party, the Ontario Progressive Conservative Party, the Ontario New Democratic Party, and the Green Party of Ontario, the local MPs and MPPs, the Association of Municipalities of Ontario, the Region of Waterloo, local area municipalities along the proposed Two-Way All-Day GO rail service and High Speed Rail route.

Voting in Favour: Mayor Guthrie, Councillors Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper and Wettstein (9)

Voting Against: Councillors Allt and Salisbury (2)

Carried

Downtown Guelph Business Association Board of Directors Appointment

Councillor MacKinnon did not speak or vote on this matter due to his declared pecuniary interest.

21. Moved by Councillor Gibson
Seconded by Councillor Piper

That Will MacTaggart be appointed to the Downtown Business Association for a term ending November, 2018, or until such time as a successor is appointed.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

Potential Disposition of Real Property in the Downtown

22. Moved by Councillor Allt
Seconded by Councillor Salisbury

That the City Solicitor be authorized to negotiate, approve, and execute an agreement of Purchase and Sale to sell the lands known as the "Old Quebec Street Mall Food Court", under substantially the same terms and conditions as described in Report Number CAO-2018-14.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

By-laws

23. Moved by Councillor Hofland
Seconded by Councillor Gordon

That By-laws Numbered (2018) - 20279 to (2018) - 20285, inclusive, are hereby passed.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

Mayor's Announcements

The Mayor read an announcement provided by Councillor Van Hellemond recognizing that George McPhee and Brian McClelland, the two General Managers of the teams vying for the Stanley Cup are from Guelph and are members of the Guelph Sports Hall of Fame and congratulated them and wished them well.

Adjournment (10:08 p.m.)

24. Moved by Councillor Piper
Seconded by Councillor Salisbury

That the meeting be adjourned.

Carried

Minutes to be confirmed on June 25, 2018.

Mayor Guthrie

Stephen O'Brien - City Clerk

This is Exhibit "1", Tab "3", Schedule "3" referred to in the Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of Guelph, in the Regional Municipality of Wellington, before me at the City of Toronto, in the Province of Ontario, on June 27, 2025 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.



Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3

Schedule 3

Staff Report



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To	Committee of the Whole
Service Area	Infrastructure, Development and Environment
Date	Tuesday, May 6, 2025
Subject	Guelph's Community Call to Climate Action

Recommendation

1. That Council receive the Guelph's Community Call to Climate Action report
 2. That Council approve staff actions to support the community in taking collective climate action as described in Guelph's Community Call to Climate Action
-

Executive Summary

Purpose of Report

To present the attached Guelph's Community Call To Climate Action (refer to Attachment-1 and Attachment-2) which provides key focus areas and priority climate actions to reduce greenhouse gas (GHG) emissions throughout the community that work towards Guelph's Community Race to Zero targets.

Key Findings

- In December 2021, Council declared support for the Cities Race to Zero campaign which sets 2030 and 2050 community-wide GHG emissions targets.
- There has been modest progress in managing community GHG emissions with the most recent data presenting an 8.2 per cent reduction in 2023 per capita emissions compared to the 2018 data. This falls short of straight-line interpolation of the Race To Zero (RTZ) target, which suggests that by 2023 a 26.3 per cent per-capita reduction is where emissions should be.
- Considering the projected new building construction and forecasted population growth, the 2030 target relates to a sustained emissions reduction of approximately 500,000 tCO₂e (tonnes of carbon dioxide equivalent).
- Since community GHG emissions are released by all sectors in Guelph, more focused and meaningful action by all members of the community is urgently required.
- Priority climate actions that will achieve rapid emissions reduction have been derived from the sector breakdown of community GHG emissions.
- Through the priority climate actions, collectively 500,000 tCO₂e emissions can be reduced by the different sectors in the community and the 2030 RTZ target achieved.
- The Corporation of the City of Guelph recognizes that it is part of the Guelph community and has a key role to play, however there are limitations to what the

Corporation can directly control with regards to community energy use and community GHG emissions.

- The Corporation is looking to work with the community, as a member of the community, to bring greater focus on Community Climate Action and collectively answer the call towards the Race To Zero goals.

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Strategic Plan Alignment

Guelph's Community Call to Climate Action encourages collective action in the community towards the Race To Zero goals by detailing key focus areas and priority climate actions to reduce GHG emissions throughout the community.

Future Guelph Theme

Environment

Future Guelph Objectives

Environment: Empower the community to help create a sustainable city

Financial Implications

The Community Call to Climate Action defines key focus areas and priority climate actions that need to be taken on by members across different sectors in the community, including the Corporation of the City of Guelph.

Corporate initiatives that support the community in the Race To Zero and Community Call to Climate Action are part of departmental workplans using staff resources and existing approved funding.

The Corporate Energy and Greenhouse Gas Emissions Reduction Plan will be presented separately to Council later this year and will provide an update on municipal operating GHG emissions along with reduction strategies.

Report

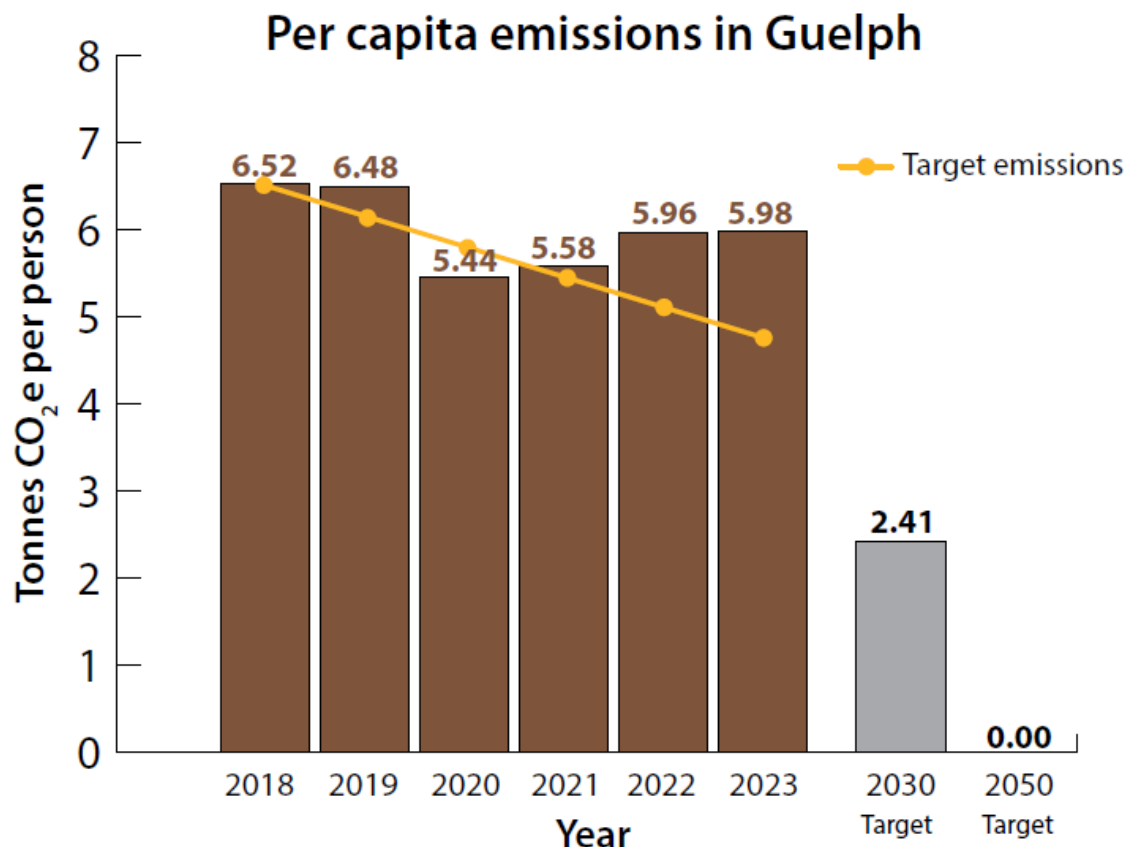
The City of Guelph acknowledged the climate crisis in 2019. Since then, community climate change targets have been set as part of the United Nations' Race To Zero campaign (RTZ), which is intended to gather leadership and support from businesses, cities, regions, and investors to reduce global carbon emissions and mitigate the impacts of climate change. The RTZ targets are as follows:

- 63 per cent reduction in per capita greenhouse gas (GHG) emissions against the 2018 baseline by 2030,
- reduce emissions further to be a net zero carbon community by 2050.

Considering the projected new building construction and forecasted population growth, the 2030 target relates to a sustained emissions reduction of approximately 500,000 tCO₂e (tonnes of carbon dioxide equivalent).

There has been modest progress in managing community GHG emissions. The most recent data (refer to Figure 1 and Figure 2) presents an 8.2 per cent reduction in 2023 per capita emissions when compared to the 2018 baseline. This falls short of where GHG emissions should be (using a straight-line interpolation of the 2030 RTZ target suggests 26.3 per cent per-capita reduction). This leaves little time to make major reductions to meet the 2030 RTZ targets. More focused and meaningful action by all members of the community is required immediately.

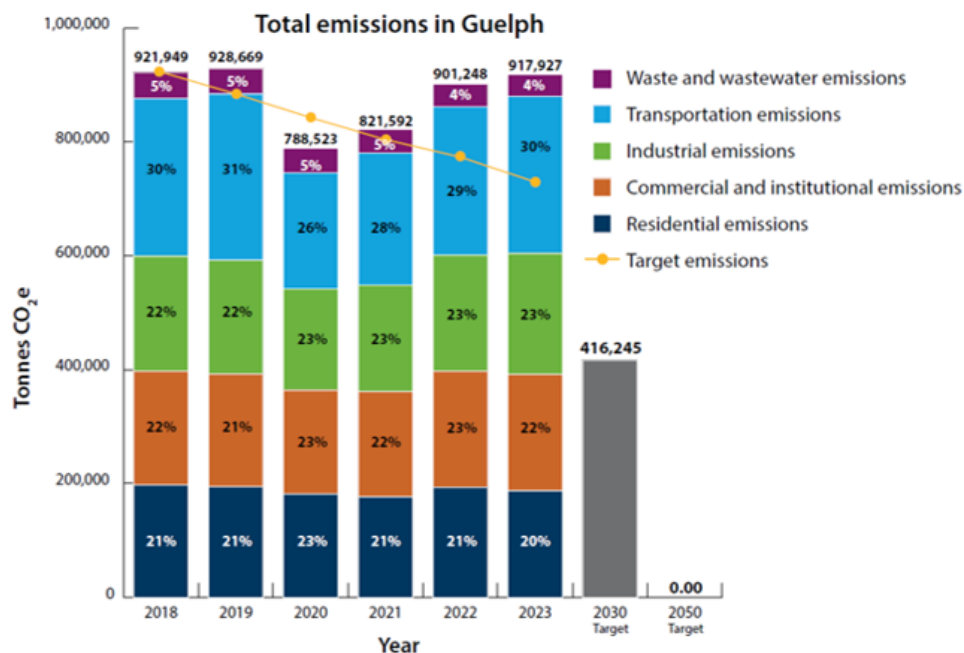
Figure 1: RTZ target progress graph (per capita emissions over the years with where the reductions should be as per RTZ 2030 target)



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Figure 2: Total community emissions over the years (show contribution from different sectors for each year 2018 to 2023)

Total emissions



Community Call to Climate Action

As seen in Error! Reference source not found., community GHG emissions are released by all sectors in Guelph. In summary, everyone has a role to play, whether you live, study, work, visit, move around, and/or consume in Guelph. Therefore, the only way to respond to the climate crisis and meet our RTZ emissions targets is with collective action by all in the community.

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Key focus areas to reduce community emissions

Guelph's Community Call to Climate Action lists the comprehensive areas where community emissions can be reduced by conserving energy and eliminating the use of fossil fuels:

- **Energy efficient and low-carbon buildings**
 - Transition building heating systems to recover waste heat and use energy efficient heat pumps
 - Carry out deep energy retrofits for existing buildings
 - Make new buildings more energy efficient and meet standards for low-carbon design
- **Decarbonized business operations**
 - Reduce energy consumption and reduce fossil fuel use by industrial, commercial, and institutional businesses in their operations
- **Renewable energy**
 - Increase solar generation on buildings and parking lots
 - Explore large-scale renewable energy projects within Guelph
- **Sustainable transportation**
 - Expand the network of safe and accessible streets and trails to promote walking, cycling and rolling
 - Advance local and inter-regional transit options as a viable alternative to personal automobile use
 - Adopt more electric vehicles
- **Circular economy**
 - Reduce waste by consuming less and sharing and reusing more
 - Use low embodied carbon construction
 - Recover energy from waste
- **Natural environment**
 - Preserve greenspaces by increasing densification and mixed-use neighbourhoods where residents can live, work and play
 - Protect and expand carbon sequestration through trees, wetlands, soils, and other nature-based solutions

Priority Climate Actions

Emissions can be reduced by the community in practical ways. Priority climate actions that will achieve rapid emissions reduction have been derived from the sector breakdown of community GHG emissions and the key focus areas:

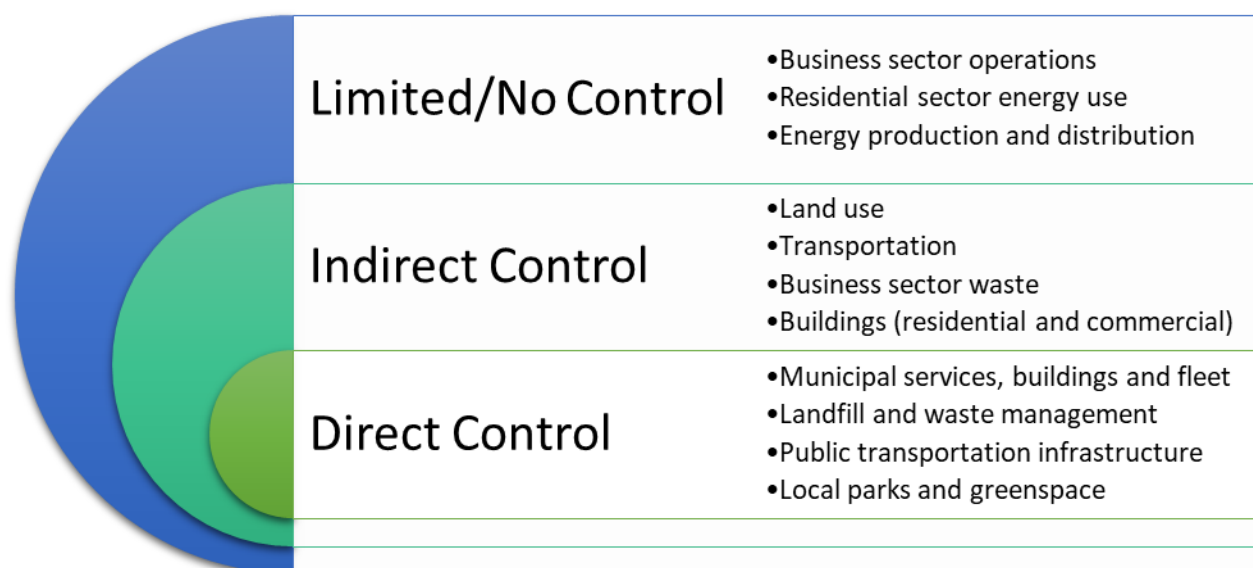
- **Homeowners:** Have 40,000 homes in Guelph change their heating systems to low carbon heat pumps
- **Builders and Developers:** Design and build all new buildings that are more energy efficient and be net zero carbon
- **Companies:**
 - All industrial companies in Guelph must work together and focus resources to reduce sector emissions by 100,000 tCO₂e
 - All commercial and institutional companies in Guelph must work together and focus resources to reduce sector emissions by 100,000 tCO₂e
- **Vehicle owners:** Replace 60,000 internal combustion vehicles with sustainable travel modes or electric vehicles
- **City:** Manage and maintain fugitive emissions from waste management and wastewater treatment to reduce emissions by 30,000 tCO₂e

Through these priority climate actions, collectively 500,000 tCO₂e of emissions can be reduced by the different sectors in the community and the 2030 RTZ target achieved.

How the Corporation supports the Race To Zero and the Community Call to Climate Action

The Corporation of the City of Guelph recognizes that it is part of the Guelph community and has a key role to play. There are limitations to what the Corporation can directly control with regards to community energy use and GHG emissions. Refer to **Error! Reference source not found.**, adapted from the Federation of Canadian Municipalities (FCM), indicating the areas where municipalities can typically influence community emissions.

Figure 3: Municipal spheres of influence over different sources of GHG emissions (adapted from [Federation of Canadian Municipalities Factsheet: Municipal governance for deep decarbonization](#))



Understanding where the Corporation can effectively contribute helps to determine where it can continue and further focus efforts to provide meaningful support to the community in taking climate action.

Community supporting efforts by the Corporation include:

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- **Collecting emissions data, tracking progress and reporting** – the Corporation collects energy and emissions data for the community and analyzes this data using the [Greenhouse Gas Protocol](#) to form the community GHG inventory. Inventories are performed on an annual basis and reported on the [Energy and Climate Change webpage](#) on Guelph.ca and the [Carbon Disclosure Project](#) (CDP). This is critical for tracking ongoing progress and identifying areas for the community to work on.
- **Partnering with community groups and environmental non-profits** – Guelph has strong environmental advocates through several environmentally focused community groups. They are trusted community resources for information on climate action and on practitioners that affect climate action. The Corporation works with different groups on their projects with the aim to share information and updates on municipal climate initiatives, while gaining insights from community group perspectives that can be factored into designing and implementing initiatives.
- **Enabling household efficiency upgrades and lowering energy costs** – the Guelph Greener Homes program offers interest free loans and low-income qualified grants to residential property owners in Guelph to do energy efficiency upgrades in their homes. This financial support helps homeowners overcome barriers by addressing cashflow concerns and making energy upgrades more affordable. Since the program launched on July 31, 2023, there have been more than 700 program registrants with over 250 completed projects, achieving a GHG reduction of approximately 400 tCO₂e.
- **Empowering youth to be climate leaders** – the [Youth Climate Action Fund](#) (YCAF) has supported climate initiatives designed and led by Guelph youth (aged 15-24). Overall, the project had 84 youth in leadership roles, 415 active youth participants in project activities, and 1,461 youth impacted by the project. With the success of the initial YCAF round, an additional \$120,000 has been granted to the City for the second phase of the program to extend the call for applications and support more youth-led climate initiatives.
- **Working alongside industrial, commercial, and institutional (ICI) partners** – in November 2024, over 70 representatives from Guelph businesses, local utilities, and the public sector gathered at the Guelph Local Stocktake on Climate – ICI Summit, to track progress against the RTZ targets. This was the first of an annual workshop event where information on energy efficiency programs and industry case studies were shared to build knowledge, strengthen connections amongst peers, and identify opportunities and barriers to climate action in the ICI sector so that more can be achieved.
- **Strengthening climate awareness and promoting activation in the community** – continuing to build climate change awareness and converting awareness to action is needed throughout the community. The Corporation works at this through several ways:

- Meeting people where they are, by connecting with community at places like workplaces, stores, schools, community centres, neighbourhood events, and fairs.
- Partnering and hosting community education and activation events such as [Clean and Green](#), [Healthy Landscapes](#), community tree planting, and [site tours](#) at the Waste Resource Innovation Centre or the Water Resource Recovery Centre. Collectively, over the nearly 100 events in 2024, more than 10,000 active participants rolled up their sleeves or learned first-hand how major infrastructure works to protect the environment.
- Leveraging the [Ecochallenge.org](#) platform to inform, entertain, and motivate the community on ways to drive sustainable habits and measure collective climate action in the community. The [Guelph Ecochallenge](#) had its first event in April 2025 having more than 100 people join in.
- **Using policy to guide climate action throughout the community** – the Corporation sets policy such as master plans, bylaws, and guidelines. Many of these policies weave in climate action to support services today and as Guelph grows. Examples are seen through the energy sustainability sections of the [Official Plan](#) and masterplans for infrastructure and services throughout the community (for example the [One Canopy Strategy](#), [Guelph Transit Future Ready Action Plan](#), [Wastewater Treatment and Biosolids Management Master Plan](#), etc.). New policies are also developed to adapt to the changes and ensure the community grows in an environmentally responsible way. Work is currently underway on a green development standard that will guide the sustainable design of new developments.
- **Investing in reliable infrastructure to help the community be more sustainable** – the Corporation manages and maintains public infrastructure that is key to supporting the community reduce GHG emissions.
 - Expanding the 153 km cycling network to get around the city
 - Preventing fugitive emissions from the Eastview landfill, organic waste, and wastewater treatment processing
 - Moving people with public transit, while increasing access through mobility services and free ride programs
 - Operating a public use electric vehicle charger network with 30 chargers at 10 different locations across the city
- **Shedding light on energy access and poverty challenges in Guelph** – estimates suggest 20 per cent of households in Guelph are vulnerable to energy poverty ([Efficiency Canada](#), 2016). Energy poverty is associated with negative health outcomes, as affected households may struggle to heat and cool their homes and power lights and appliances. Higher rates of energy poverty are likely to be experienced by newcomers, seniors, renters, single parent households, and other traditionally marginalized communities. The City of Guelph, Guelph Lab, and researchers from the University of Guelph and University of Toronto, are working collaboratively to engage the community and characterize energy poverty within Guelph, determine its impacts, and recommend actions to improve long-term energy affordability and reduce energy vulnerability for Guelph's equity-deserving communities.

Next Steps

Guelph's Community Call to Climate Action is included as Attachment-1 Guelph's Community Call to Climate Action and is a critical reshaping of the conversation on climate change for the community to take collective action. The Community Call to Climate Action lists key focus areas and priority climate actions that everyone in the community can work towards. Refer to Attachment-2 Guelph's Community Call to Climate Action – Backgrounder for background information that provides helpful context for Community Climate Action. Communication strategies will be designed and deployed to socialize the Community Call to Climate Action and mobilize community members in Guelph.

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The Corporation has added staff resources to the Energy and Climate Change team so the team can continue to provide community supporting efforts and continuously evaluate where community supports can go further. Overall, the Corporation is always looking to work with the community, as part of the community, to bring greater focus on Community Climate Action and collectively answer the call towards the 2030 and 2050 Race To Zero goals.

Financial Implications

The Community Call to Climate Action defines key focus areas and priority climate actions that need to be taken on by members across different sectors in the community, including the Corporation of the City of Guelph.

Corporate initiatives that support the community in the Race To Zero and Community Call to Climate Action are part of departmental workplans using staff resources and existing approved funding.

The Corporate Energy and Greenhouse Gas Emissions Reduction Plan will be presented separately to Council later this year and will provide an update on municipal operating GHG emissions along with reduction strategies.

Consultations and Engagement

The Community Call to Climate Action builds on past community energy plans and is informed by data and community insights gained from various connections through the many community supporting efforts by the Corporation.

Corporate departments have been consulted for the preparation of the Community Call to Climate Action and include Engineering and Transportation Services, Environmental Services, Parks, and Planning and Building Services.

Attachments

Attachment-1 Guelph's Community Call to Climate Action

Attachment-2 Guelph's Community Call to Climate Action – Backgrounder

Attachment-3 Guelph's Community Call to Climate Action – Staff Presentation

Departmental Approval

None

Report Author

Bryan Ho-Yan, MASc, P.Eng., CEM, Manager, Energy and Climate Change

This report was approved by:

Antti Vilkkö, P.Eng., MBA
General Manager, Facilities and Energy Management
Infrastructure, Development and Environment
519-822-1260 extension 2490
antti.vilkkö@guelph.ca

This report was recommended by:

Jayne Holmes, P.Eng., PMP
Deputy Chief Administrative Officer
Infrastructure, Development and Environment
519-822-1260 extension 2248
jayne.holmes@guelph.ca

This is Exhibit "1", Tab "3", Schedule "4" referred to in the Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of Guelph, in the Regional Municipality of Wellington, before me at the City of Toronto, in the Province of Ontario, on June 27, 2025 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

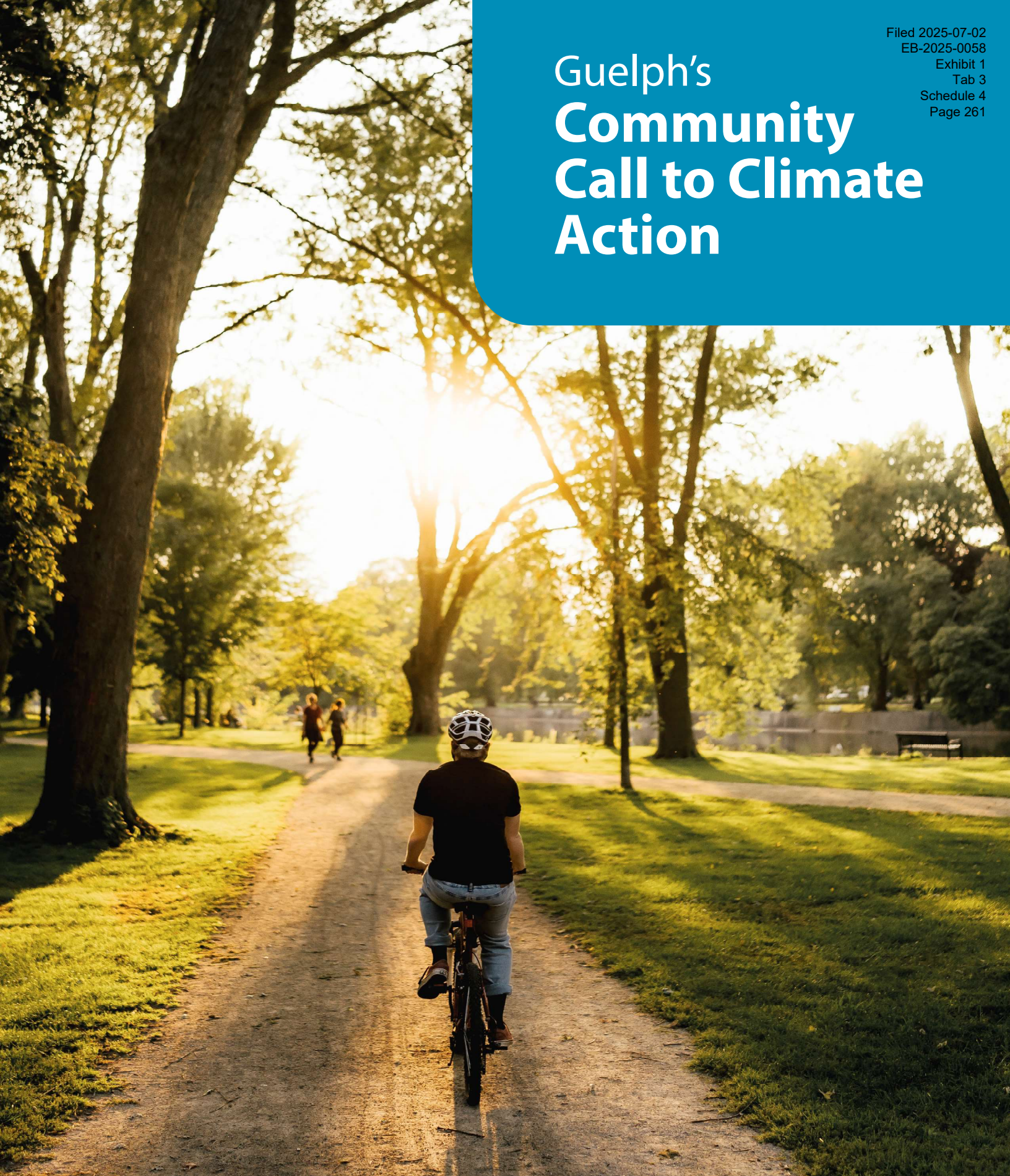


Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3 Schedule 4

Guelph's Community Call to Climate Action



Understanding the Community Call to Climate Action

Climate change is caused by having far too much greenhouse gas (GHG) in the atmosphere. These GHGs are primarily because of human activity and burning fossil fuels for energy. Energy plays a large part of our everyday lives – powering our homes and appliances, running our local shops and businesses, and moving us around Guelph and beyond. While energy will continue to play a key role in our lives and our future, **we must understand the connection between energy and climate change so we can use energy in a better way.**

The Community Call-to-Climate Action will support everyone in Guelph:

- Better understand GHG emissions from energy use
- Identify ways we can reduce GHG emissions
- Help the Guelph community focus our collective climate action

Although Guelph is small compared to the rest of the world, we each release more GHG emissions than the global average. To help reduce GHG emissions, we all need to do our part—including here in Guelph. It will improve the well-being of our residents, our local economy and the environment, now and for generations to come.

How Climate Change impacts all of us

?
**How does
climate change
impact you?**

Climate change is not a distant problem. It affects absolutely everything, around the world and our daily lives right here in Guelph.



Lower farm yields



Rising food costs



**More conflicts over
limited resources**



**Extreme weather events
causing property damage**



People being displaced



**Increased disease due to
warmer temperatures**



More invasive pests



Productivity loss



Higher insurance premiums



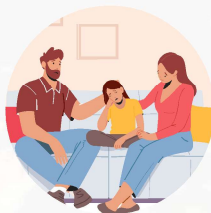
Water shortages



Poorer air quality



Climate anxiety



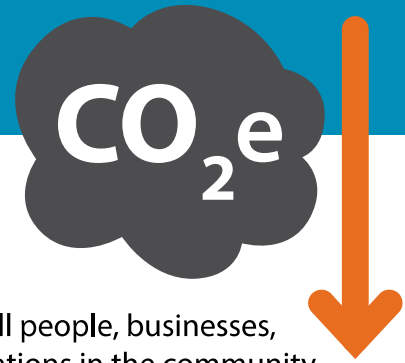
Youth disenfranchisement



More flooding

Our Community Climate Target

The City of Guelph is fighting climate change through its commitment to the United Nations Race To Zero campaign.



Encourage all people, businesses, and organizations in the community to help conserve energy and reduce GHG emissions.

Guelph's Race to Zero Community GHG Emissions

63%
reduction
per capita

in GHG emissions
by 2030 against
the 2018 baseline

Work together
to become a

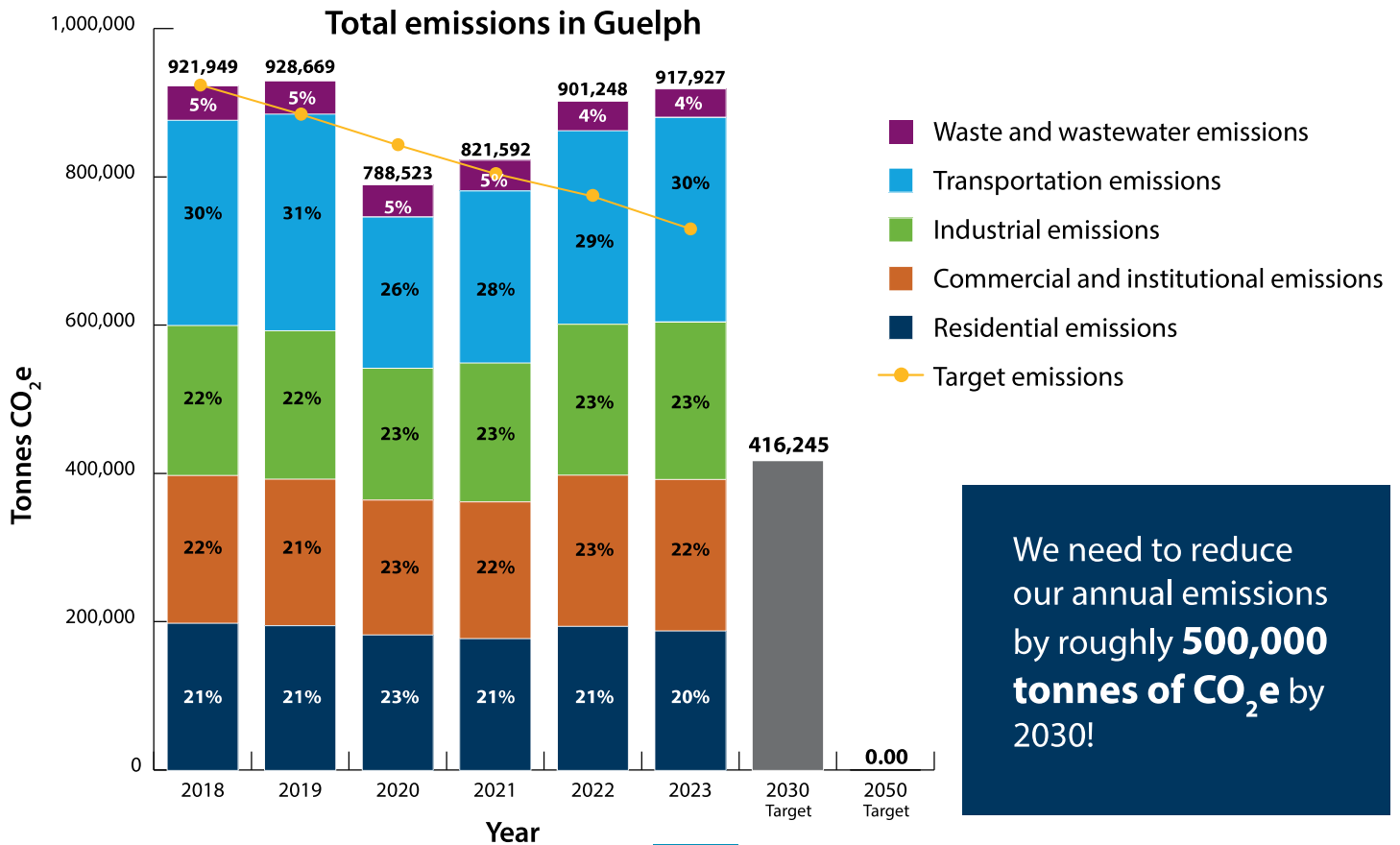
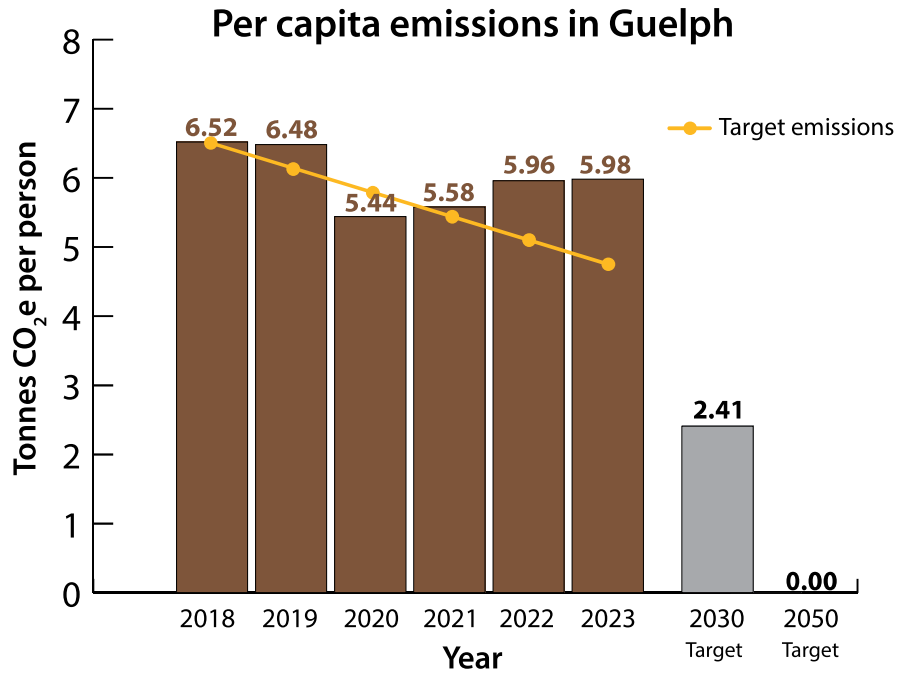
net zero
carbon
community

by 2050



Our progress against targets

Tracking community GHG emissions helps us know how things are going and what must be done. Although some progress has been made over the years, more action is needed now to reduce GHG emissions and fight climate change.



We need to reduce our annual emissions by roughly **500,000 tonnes of CO₂e** by 2030!

Ways we can act to reduce community GHG emissions

Here are key focus areas where we can better manage our energy use and GHG emissions as we live, work and play in Guelph.

Energy efficient and low-carbon buildings

- Transition building heating systems to recover waste heat and use energy efficient heat pumps
- Carry out deep energy retrofits for existing buildings
- Make new buildings more energy efficient and meet standards for low-carbon design



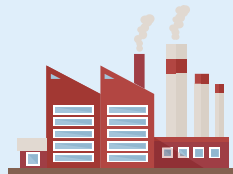
Sustainable transportation

- Expand the network of safe and accessible streets and trails to promote walking, cycling and rolling
- Advance local and inter-regional transit to be a better option than personal automobile use
- Adopt more electric vehicles



Decarbonized business operations

- Reduce energy consumption and reduce fossil fuel use by industrial, commercial and institutional businesses in their operations



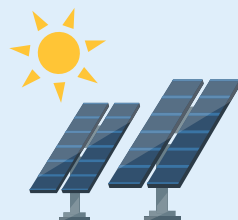
Circular economy

- Reduce waste by consuming less and more sharing and reusing
- Use low embodied carbon construction
- Recover energy from waste



Renewable energy

- Increase solar generation on buildings and parking lots
- Explore large-scale renewable energy projects within Guelph



Natural environment

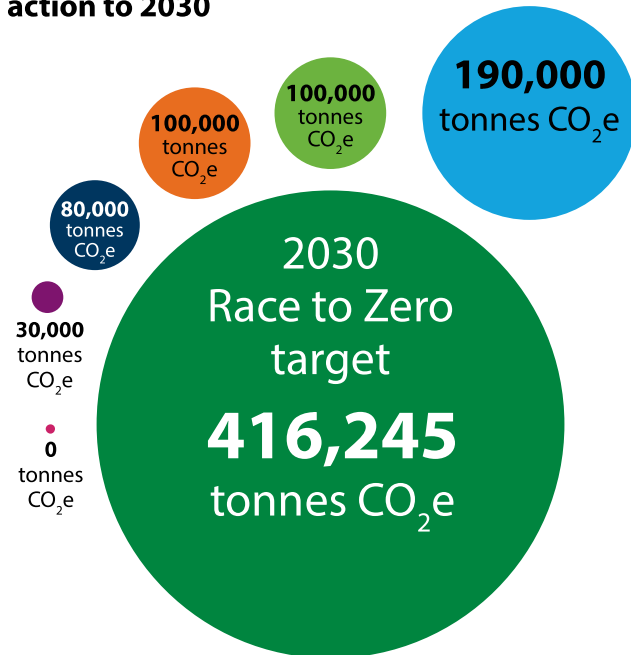
- Preserve greenspaces by increasing densification and mixed-use neighbourhoods where residents can live, work and play
- Protect and expand carbon sequestration through trees, wetlands, soils, and other nature-based solutions



What do we need to do?

We need real action by all, and we need to act now. These are the priority climate actions that will help us reach our 2030 Race To Zero targets and fight climate change.

Carbon reduction potential of each priority climate action to 2030



Total 2023 emissions
917,927 tonnes CO₂e

Homeowners:

- Have **40,000** homes in Guelph change their heating systems to low carbon heat pumps

Builders and Developers:

- Design and build **all** new buildings that are more energy efficient and be net zero carbon

Vehicle owners:

- Replace **60,000** internal combustion vehicles with sustainable transport modes or electric vehicles

City:

- Manage and maintain fugitive emissions from waste management and wastewater treatment to reduce emissions by **30,000** tCO₂e

Companies:

- All industrial companies in Guelph must work together and focus resources to reduce sector emissions by **100,000** tCO₂e
- All commercial and institutional companies in Guelph must work together and focus resources to reduce sector emissions by **100,000** tCO₂e

Answer the Community Call to Climate Action

We need climate action now!

Support each other to get priority climate actions done in the community.

Live, work, and play in ways that reduce community GHG emissions.

Only by coming together as a community and all of us doing our part to use less fossil fuels to reduce GHG emissions, our collective actions will add up to what is needed to achieve our Race To Zero targets and fight climate change.

Need more information and ideas on how to take climate action?

Read the Guelph's Community Call to Climate Action Backgrounder.



For more information

1 Carden Street
Guelph, ON N1H 3A1

519-822-1260

guelph.ca

Accessible formats
available by contacting
519-822-1260 extension
2672/TTY 519-826-9771.



Guelph's Community Call to Climate Action

Backgrounder



Global Warming and Climate Change

Temperature measurements of earth have been taken across the world for a long time, with records going back as far as the 1880s. There are two very clear and alarming trends:

1. The earth's temperature is increasing
2. The increase in the earth's temperature has been going up at a much faster rate since the 1970s

It is this heating of the earth's surface that is called global warming. At a global level, 2024 was reported to be the hottest year on record, beating out the previous record that was set in 2023. Just as global temperatures are rising, temperatures in Canada are increasing twice as fast compared to the rest of the world. The average annual temperature increased in Canada by 2.0°C from 1948 to 2023.

It is well established by scientists that global warming is driven by human activity and largely when people use fossil fuels like coal, natural gas, gasoline or diesel. We burn fossil fuels for energy to do

things like heat our buildings, run our businesses, and drive our cars, and in doing so, this releases different harmful gases called greenhouse gases (GHGs). These GHGs go up into the air and build up in the earth's atmosphere. As more and more GHGs build up, they act like a blanket trapping in heat and making the earth hotter and hotter.

As global warming gets worse, we are seeing more extreme weather and climate events. These include heatwaves, heavy rainfall, droughts, rapid glacial melting and warmer oceans. These long-term weather pattern changes are referred to as climate change. Climate change has serious impacts on people, the environment and the economy. As the intensity of global warming increases, driven by rising GHG emissions, the impacts and risks of climate change become worse for everybody. Climate change is happening right here in Guelph, as we live through more extreme temperatures, flash flooding, and severe storms.

Show me the data!

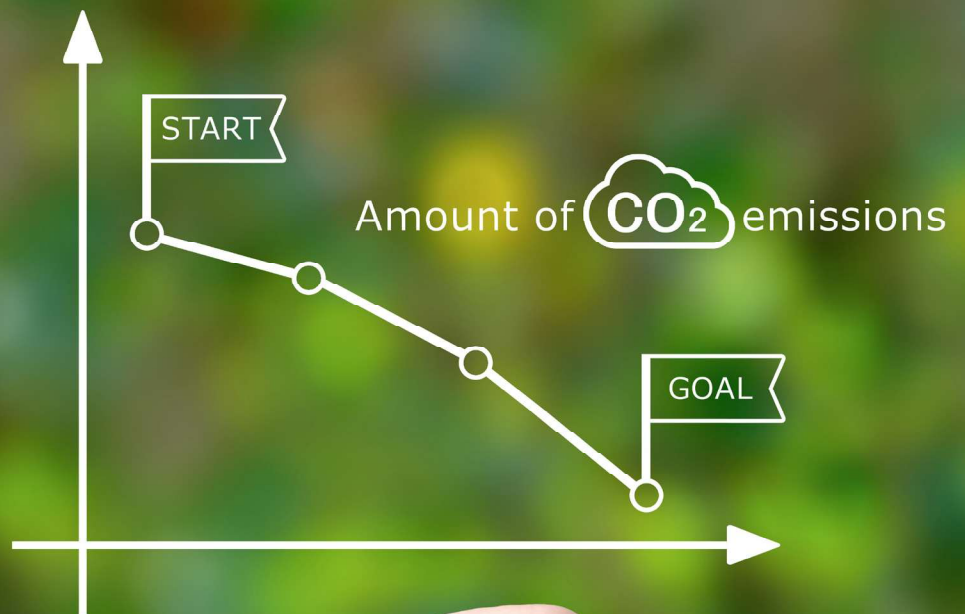
Here are a few useful climate data references:

- [Copernicus Climate Change Service–global climate data](#)
- [Government of Canada–temperature change in Canada](#)
- [City of Guelph Climate Adaptation Plan](#)

The Paris Agreement and Net Zero Goal

The Paris Agreement is a legally binding international agreement on climate change that was reached in 2015. Canada and 193 other countries have joined the agreement. One of the long-term goals of the agreement is to not have global temperatures increase by more than 1.5°C when compared to temperatures before the industrial revolution (in the 1850s). To not go past this temperature limit, global emissions of GHGs need to come down.

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations international body for assessing climate change science. According to **analysis by the IPCC**, to limit global temperature increase to the threshold established in the Paris Agreement, global greenhouse gas emissions will need to reduce at a drastic rate declining by 45 per cent from 2010 levels by 2030 and reaching “net zero” around 2050.



Federal and Provincial greenhouse gas targets

Canada and Ontario have made commitments towards reducing greenhouse gas emissions

For the Paris Agreement, Canada has committed to reducing GHG emissions by 40-45 per cent below 2005 levels by 2030. In 2021, the federal government also passed the Canadian Net-Zero Emissions Accountability Act. This Act formalized Canada's commitment to the following:

- Achieving a net zero carbon economy by 2050
- Introducing 5-year interim greenhouse gas reduction targets from 2030 until 2050

The Ontario government released the Made-in-Ontario Environment Plan in 2018, committing to reducing provincial greenhouse emissions to 30 per cent below 2005 levels by 2030.

Learn more about the plans:

- International–[The Paris Agreement](#)
- Canada–[Canadian Net-Zero Emissions Accountability Act](#)
- Ontario–[Made-in-Ontario Environment Plan](#)



City of Guelph greenhouse gas targets

Guelph has made a commitment to reduce community greenhouse gas emissions

Guelph released a Community Energy Plan (CEP) in 2007, the first such plan in Canada. In 2010, the CEP was renamed the Community Energy Initiative (CEI) to represent a transition to implementation aspects. The CEI was updated in 2018 with a new target set for Guelph to be a net zero carbon community by 2050.

In 2021, Guelph reaffirmed its commitment to fighting climate change by declaring support for the United Nation's Cities Race To Zero campaign.

Guelph's Race to Zero targets build on past Community Energy Plans and use science-based methods to define Guelph's fair share of global GHG emissions reduction.

Guelph's Race To Zero targets are as follows:

- Reduce per capita greenhouse gas emissions by 63 per cent against the 2018 baseline by 2030
- Be a net zero carbon community by 2050



Guelph's community greenhouse gas emissions

Greenhouse Gas Emission Categories

Community GHG emissions can be grouped into scope 1, scope 2 or scope 3 emissions.



Scope 1: GHG emissions that come from burning fossil fuels within Guelph's city boundary. Examples include houses or offices burning natural gas for heating.



Scope 2: GHG emissions tied to electricity used within Guelph's city boundary. These GHG emissions account for the electrical generation that happens outside of Guelph and delivery of this electricity from the generators to Guelph.

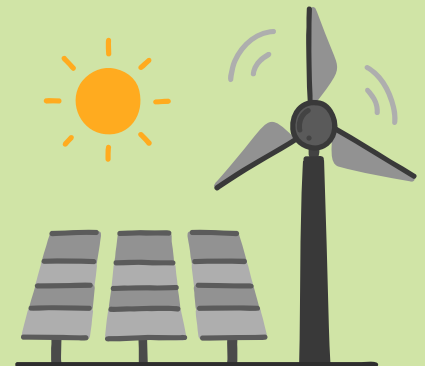


Scope 3: GHG emissions that are released outside of Guelph's city boundary because of activities within the city boundary. Examples include using products like food, coffee cups, clothes, building materials, etc. in Guelph, but manufacturing and disposal of these products release GHG emissions and are done outside of Guelph.

Where does our electricity come from?

Ontario's electricity is generated using both fossil fuel sources (example, natural gas) and non-fossil fuel sources (example, nuclear, hydro, wind, solar, etc.). As of 2024, 72% of Ontario's electrical generation capacity uses non-fossil fuel sources. Since we use non-fossil fuel generators more of the time, the non-fossil fuel generation produced 87% of Ontario's electrical energy, of which around a third of the energy was produced using renewable energy sources such as hydro, wind, solar, or biomass.

More information can be found at the [Independent Electricity System Operator website](#).



?

Where do most GHG emissions in the community come from?

- Using gasoline or diesel to drive our vehicles
- Burning natural gas for heating building spaces, water, cooking, manufacturing processes
- Natural gas leaks
- Refrigerant leaks
- Electricity usage
- Emissions from landfills and sewage

CO₂

SF₆

CH₄

N₂O

HFCs

PFCs

NF₃

Scope 2 Indirect

Purchased electricity
 Purchased heating, cooling

Scope 3 Indirect

Purchased goods and services
 Waste generated in community
 Transportation and distribution

Scope 1 Direct

Guelph households
 Guelph companies
 Guelph vehicles

Scope 3 Indirect

Investments
 End-of-life treatment of sold products
 Use of sold products
 Transportation and distribution

Upstream activities

Reporting community

Downstream activities

Reporting Guelph's Greenhouse Gas Emissions



How we get the numbers:

Find more information here on the method used for the community GHG inventory:

- [Protocol for Community-Scale Greenhouse Gas Inventories \(GPC Protocol\)](#)



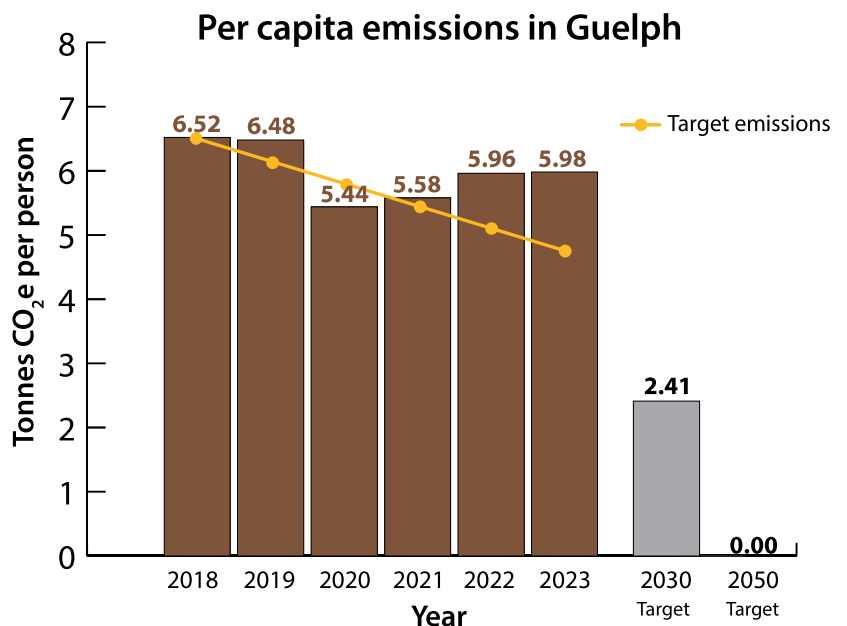
What is a tonne of carbon dioxide equivalent?

When we do things like burn fossil fuels, we release different harmful gases that make up GHG emissions. These different gases each cause different levels of global warming harm. To simplify reporting on all the different harmful gases, each different gas impact is translated to the equivalent impact that carbon dioxide causes.

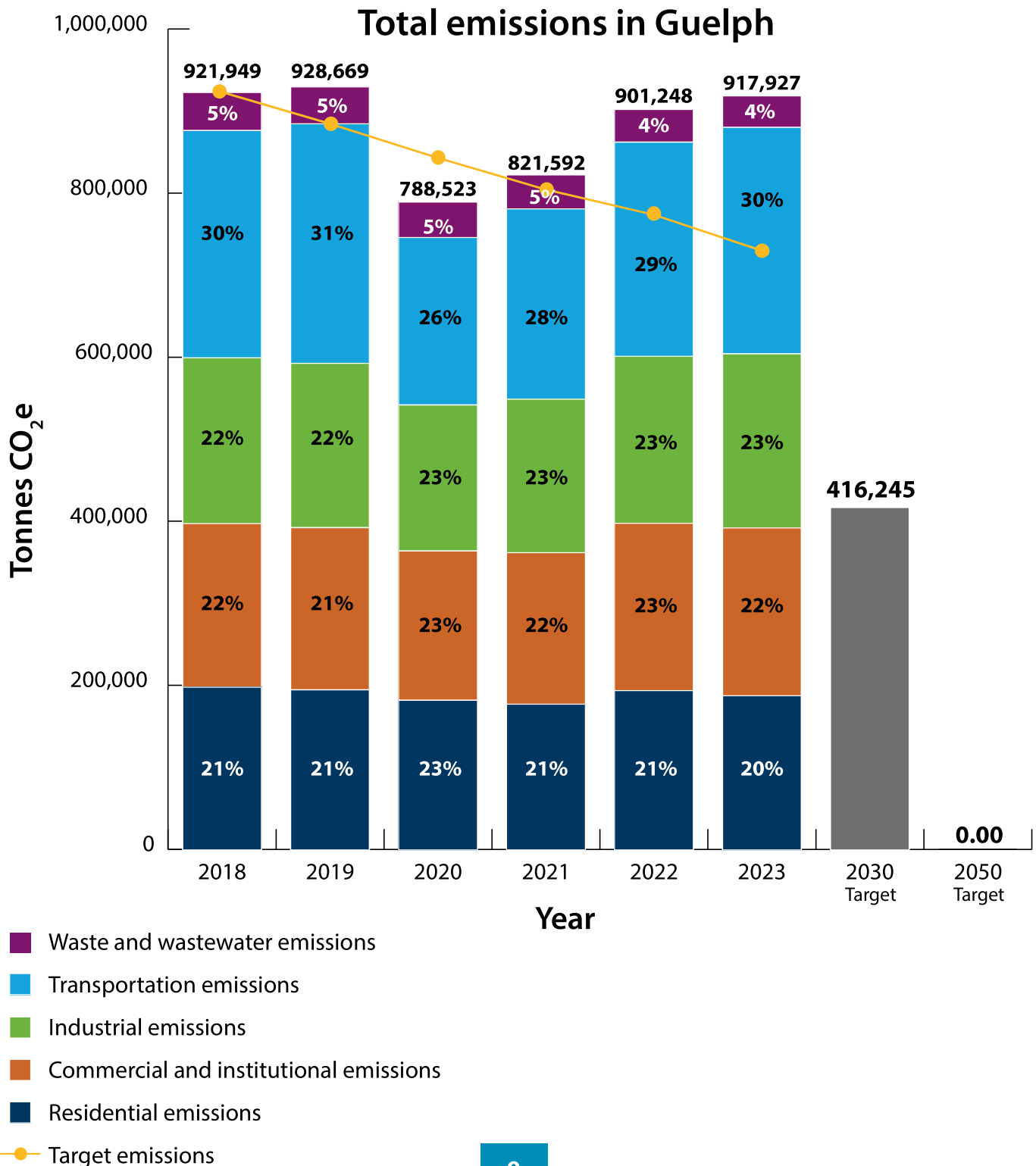
A VW buggy weighs about the same as a tonne of carbon dioxide equivalent.

An inventory of Guelph's GHG emissions are taken each year to track progress against the Race To Zero targets. Guelph's annual GHG reporting is prepared annually following the Protocol for Community-Scale Greenhouse Gas Inventories (GPC Protocol) and using various data sources (such as energy consumption data from the local utilities Alectra Utilities and Enbridge) and calculation factors. Scope 1 and 2 GHG emissions are included in Guelph's GHG emissions inventory. Scope 3 emissions are very difficult to track for the community and only some are included in the inventory.

The charts below present Guelph's per capita and total annual GHG emissions from 2018 to 2023 and the Race To Zero targets set for 2030 and 2050. GHG emissions are reported using a unit called 'tonnes of carbon dioxide equivalent' (tCO₂e). Per capita emissions are calculated for each year by dividing the total annual GHG emissions by Guelph's population. Per capita emissions are reported in the unit called tCO₂e per person.



We need to reduce
our annual emissions
by roughly **500,000
tonnes of CO₂e** by
2030!



Ways we can act to reduce community GHG emissions

To reduce GHG emissions in Guelph, we need to focus on a few key areas

Based on total GHG emissions remaining near 2018 levels and per capita emissions only decreasing slightly, it is clear that drastic and collective action by the Guelph community is required to address what the climate science is telling us and meet the Race To Zero interim target of 63% per capita emissions reduction by 2030, against the 2018 baseline.

Informed by the community GHG inventory data the following areas emerge as key focus areas where we can all act together to reduce community GHG emissions:

Energy efficient and low carbon buildings

All the different buildings in Guelph (for example houses, stores, offices, restaurants, hotels, recreation centres, hospitals, schools, warehouses) are a big contributor to Guelph's community GHG emissions. These buildings use energy for various needs. These needs include heating or cooling the building space, heating hot water, lighting, and powering appliances and equipment.

In the case of residential, commercial and institutional buildings, heating building interior spaces and heating water account for a large portion (>50 per cent) of energy consumption. In Guelph, almost all the energy used for building space heating and water heating is by burning natural gas.

It is also important to consider new building construction. On the residential side, the total number of households in Guelph is estimated to reach 85,700 by 2051. In the near term, Guelph has



Climate action tips:

There are several actions, big or small, that community members can take to reduce GHG emissions and support Guelph's Race To Zero. Some examples are as below:

- Use heat pumps to heat more efficiently and with a much cleaner energy source
- Invest in renewable solar power to bolster electricity grid to enable electrification
- Reduce car trips and use sustainable transportation alternatives (walking, rolling, biking, public transit, etc.)
- Eliminate tailpipe emissions by using electric vehicles
- Reduce material waste because it takes a lot of resources and energy to make stuff and get rid of stuff
- Properly sort waste to increase ability to reuse and recycle materials
- Process organic waste properly by keeping it out of landfill and sending it to composting or anaerobic digestion facilities to produce soil amendment and renewable natural gas
- Build more energy efficient buildings, new and existing
- Complete process equipment upgrades to reduce GHG emissions and make the industrial, commercial and institutional sector more energy efficient
- Learn more about and always encourage adoption of energy efficiency and GHG emissions reduction

committed to supporting the construction of 18,000 new homes by 2031 through the Municipal Housing Pledge made in 2023. Additionally, Guelph's population is expected to rise to 208,000 people by 2051. The growth in population will likely require more buildings. These new buildings will use energy and will add to the community's GHG emissions. By how much, depends on what type of energy and how energy efficient the buildings are.

Decarbonized business operations

Guelph is home to over 3,000 businesses. These local businesses have various business operations that use energy (for example manufacturing processes, refrigeration, cooking, etc.) with some operations that use energy sources such as natural gas or propane.

The industrial sector alone represents around 20 per cent of Guelph's community greenhouse gas emissions. Energy is consumed for various end-uses within manufacturing facilities. In Guelph, manufacturing is the largest industry employing Guelph residents. Manufacturers in Guelph produce a variety of products including casting and forgings, machined parts, formed and stamped metals, polymers, precision tools, automotive interior parts, cabinetry and millwork, corrugated packaging, antennas, beer, milk products, fiberglass composites, vaccines, agricultural equipment, lifts for aerial work and dump trucks. Various processes in manufacturing plants involve the use of equipment such as infrared heaters, industrial steam boilers and water heaters, combined heat and power systems, furnaces, curing ovens, dryers, and pasteurizers, most of which typically burn fossil fuels like natural gas for producing heat.

Sustainable transportation

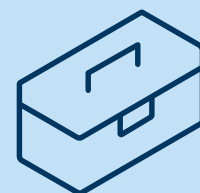
Transporting people and goods within Guelph involves using passenger cars, commercial vehicles, tractor-trailers and buses, and represents around 30 per cent of Guelph's community greenhouse gas emissions. Most of these vehicles burn either gasoline or diesel fuel resulting in GHG emissions. The use of privately-owned passenger vehicles by Guelph residents accounts for a large portion of transportation related energy consumption and in Guelph, more than 75 per cent of the trips that have a start point and end point within the city are completed by car. Guelph's existing vehicle count is estimated to be around 100,000. With Guelph's population growth, vehicle counts will rise unless there is a shift to more sustainable modes of transportation such as cycling and public transit. Any new vehicles added to Guelph's current vehicle count will result in adding GHG emissions unless the new vehicle uses clean energy.

Renewable energy

Most of the City's current energy demand is met by natural gas, electricity, gasoline, and diesel. Energy from resources such as hydro, wind, solar, biomass and geothermal are termed renewable energy and

Cool tools:

Use [Google's Environmental Insights Explorer](#) to check out estimates of activity, emissions and reduction opportunities (like solar potential) for different places and cities like Guelph.



do not produce greenhouse gas emissions. Therefore, renewable energy plays an important role in Guelph's Race To Zero journey.

Presently, the electricity generated by solar systems in Guelph adds up to less than 1 per cent of the City's total annual electricity consumption. Estimates indicate that if solar panels are installed on all buildings in Guelph, this can generate an amount of electricity equal to 65 per cent of the City's total annual electricity consumption.

Circular economy

Resources such as raw materials, water, energy, land, buildings, and equipment are needed to produce various goods used by the community. There are many stages in producing things, such as resource extraction, pumping, treating and distributing water, transporting materials, operating process equipment, manufacturing, delivery, waste disposal. All of these production stages require energy and emits GHGs. In the typical production-consumption way of doing things, raw materials are gathered and converted to products that can be used by consumers. After the consumers have no more use for the products, they are thrown away as waste. An example of the production-consumption model is when people buy too much food and waste the extra food. The circular economy approach is a different way of doing things, with the aim to reduce waste by keeping materials and goods in circulation for as long as possible. This is done through reusing, repairing, refurbishing, repurposing, recycling, and recovering as much material and/or energy from any residual waste stream. Going back to the example with food, the circular economy model would take the extra food and save it for the next meal or share it with others. Any of the food that doesn't get eaten, say like fruit peels and egg shells, gets composted and reused for planting so that nothing is wasted.

Natural environment

Guelph has natural assets such as land, soil, water, air, renewable resources, vegetation and trees. The natural environment offers an important climate solution as it can absorb and store large amounts of carbon dioxide (CO₂) from the atmosphere.

Trees along with other vegetation can provide shading and cooling during warm weather seasons. It is estimated there are around three million trees in Guelph with the tree canopy covering around 23 per cent of Guelph's total land area. Guelph has set the goal of increasing the tree canopy cover to 40 per cent by 2070.

Nature's remedy:

Along with removing CO₂ from the atmosphere, the natural environment helps us in so many ways:

- Provides shade and keeps things cooler
- Prevents flooding by absorbing water
- Supports biodiversity and wildlife
- Offers a place for people to explore and play

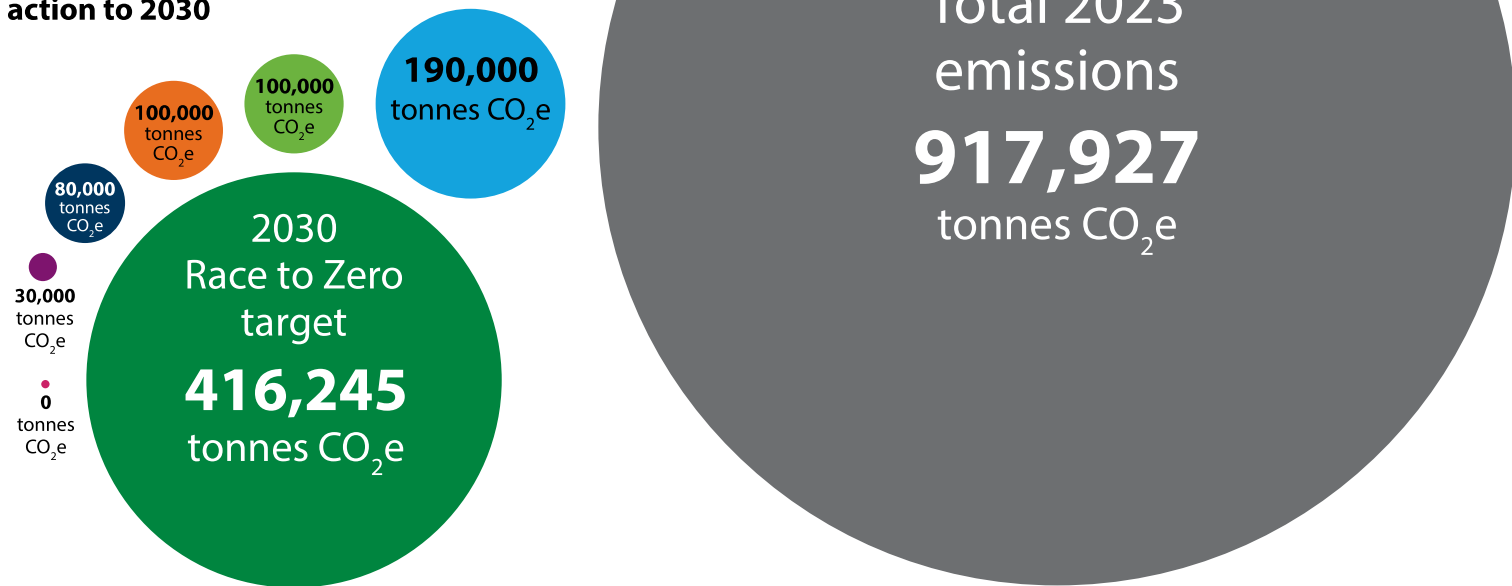


What do we need to do?

Guelph's Priority Climate Actions

The community GHG inventory data tells us that emissions come from all sectors: residential, commercial, institutional, industrial, transportation and waste management. Of the key focus areas mentioned earlier, there are priority climate actions that can result in a big drop to Guelph's GHG emissions.

Carbon reduction potential of each priority climate action to 2030



Homeowners:

- Have **40,000** homes in Guelph change their heating systems to low carbon heat pumps

Builders and Developers:

- Design and build **all** new buildings that are more energy efficient and be net zero carbon

Vehicle owners:

- Replace **60,000** internal combustion vehicles with sustainable transport modes or electric vehicles

City:

- Manage and maintain fugitive emissions from waste management and wastewater treatment to reduce emissions by **30,000 tCO₂e**

Companies:

- All industrial companies in Guelph must work together and focus resources to reduce sector emissions by **100,000 tCO₂e**
- All commercial and institutional companies in Guelph must work together and focus resources to reduce sector emissions by **100,000 tCO₂e**

Homeowners: Have 40,000 homes in Guelph change their heating systems to low carbon heat pumps

A heat pump is an energy-efficient and low GHG emissions alternative to natural gas furnaces and hot water heaters. There are nearly 60,000 homes in Guelph. If 40,000 of these homes switched to a heat pump system for space heating and water heating it is estimated this collective action will reduce community GHG emissions by approximately 80,000 tCO₂e. Several homes in Guelph have already made the switch. This is a great start and more climate action like this is needed.

Builders and Developers: Design and build all new buildings that are more energy efficient and be net zero carbon

In Ontario, the law requires building construction to meet the Ontario Building Code (OBC). The OBC covers technical requirements for building design and construction such as heating, ventilation and air

conditioning, plumbing, and energy efficiency. The OBC sets minimum requirements for buildings and if new buildings in Guelph are designed and built to only meet the OBC minimum, they will add more GHG emissions to the inventory.

There are other building standards that meet and go beyond the OBC when it comes to energy efficiency. These higher standards are an opportunity to make buildings more comfortable, have lower utility costs, and be better at withstanding climate change. There are many examples of buildings in Guelph that used higher standards. If all new buildings in Guelph are designed and constructed to these higher building standards and have a net zero GHG emissions footprint, then new buildings will not add to the community GHG emissions.

Companies: All industrial companies in Guelph must work together and focus resources to reduce sector emissions by 100,000 tCO₂e

Reducing by 100,000 tCO₂e amounts to approximately 50% of the industrial emissions. Industrial

Get pumped about heat pumps!

Here are a few online resources for information on heat pumps:

- [Heating and cooling heat pumps–Natural Resources Canada](#)
- [Water heater guide–Natural Resources Canada](#)



Better building standards:

Here are a few resources for green buildings standards:

- Zero Carbon Building Standard
- Canadian Home Builders' Association Net Zero Homes
- Energy Star Buildings
- Passive House Standard



companies in Guelph are already working to reduce energy usage and continue to implement energy efficiency and renewable energy measures because of the strong business case and environmental benefits. Many of these companies have also set their own climate targets to meet social responsibilities to communities and their customers. However, industrial processes can be very complex and can take significant resources. Continued effort is needed by the different industrial companies to further reduce emissions in the sector.

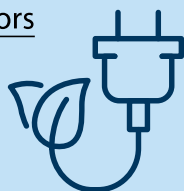
Companies: All commercial and institutional companies in Guelph must work together and focus resources to reduce sector emissions by 100,000 tCO₂e

Similar to the industrial sector, the commercial and institutional companies in Guelph contribute

Smart money:

There are energy efficiency rebates on offer, because it makes good business sense to save energy and reduce GHG emissions. Here are a few resources to learn more about energy rebate programs for businesses in Ontario:

- Save On Energy
 - » [For your small business](#)
 - » [For business and contractors](#)
- [Enbridge Incentives and Conservation Programs](#)



a big portion of GHG emissions to the community inventory. Reducing by 100,000 tCO₂e amounts to approximately 50% of commercial and institutional sector emissions. Among the varying scale of companies within the sector, many organizations in the sector have set company-based climate targets and climate plans. Continued work is needed to further progress these plans and help motivate other companies that have yet to prioritize climate action.

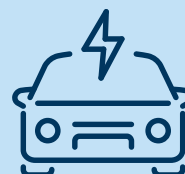
Vehicle owners: Replace 60,000 internal combustion vehicles with sustainable transport modes or electric vehicles

Transportation within Guelph is the largest contributor of emissions among the different sectors. Using alternative ways to get around the city, such as cycling or taking public transit, greatly reduce transportation GHG emissions. Transitioning to electric vehicles is also an effective way to lower emissions by improving energy efficiency and using a cleaner energy source. There are roughly 100,000 vehicles in Guelph, and by replacing 60,000 of these internal combustion vehicles, reduce community emissions by approximately 190,000 tCO₂e

Electrify your ride:

Here are a few online resources for more information on electric vehicles:

- [Buying an Electric Vehicle—Natural Resources Canada](#)
- [Plug N Drive](#)



City: Manage and maintain fugitive emissions from waste management and wastewater treatment to reduce emissions by 30,000 tCO₂e

The community makes different kinds of waste, such as wastewater and solid waste, that must be treated and processed. All of the wastewater from Guelph homes and businesses goes to the Water Resource Recovery Centre (WRRRC) in Guelph, where it gets cleaned before going to the river to keep the environment healthy. Different wastewater treatment processes release GHG emissions. Guelph homes and businesses also create solid waste, with some of this waste being organic materials, such as food scraps and food waste. We separate organic waste by putting it in green bins, which are collected and sent to the Organic Waste Processing Facility (OWPF) in Guelph. This is where the organic waste is turned into compost and sold to farms, which improves soil and helps grow crops. GHG emissions are also released from different processes at the OWPF. In the past, organics were not separated from other solid waste. Because of this, more organic waste ended up in landfills, including at the Eastview Landfill in Guelph, which operated between 1961 and 2003. As organic waste sits in landfills, they break down and release landfill gas which contains methane, a more harmful type of greenhouse gas. At the Eastview Landfill, systems are maintained to gather as much of the landfill gas as possible and break it down further by burning it to make it less harmful.

Annual greenhouse gas emissions from processes at WRRRC, OWPF and the Eastview Landfill site combined are around 38,000 tCO₂e. It is important that these sites continue to be maintained and managed to reduce the release of GHG emissions.

Learn more about how Guelph manages waste:

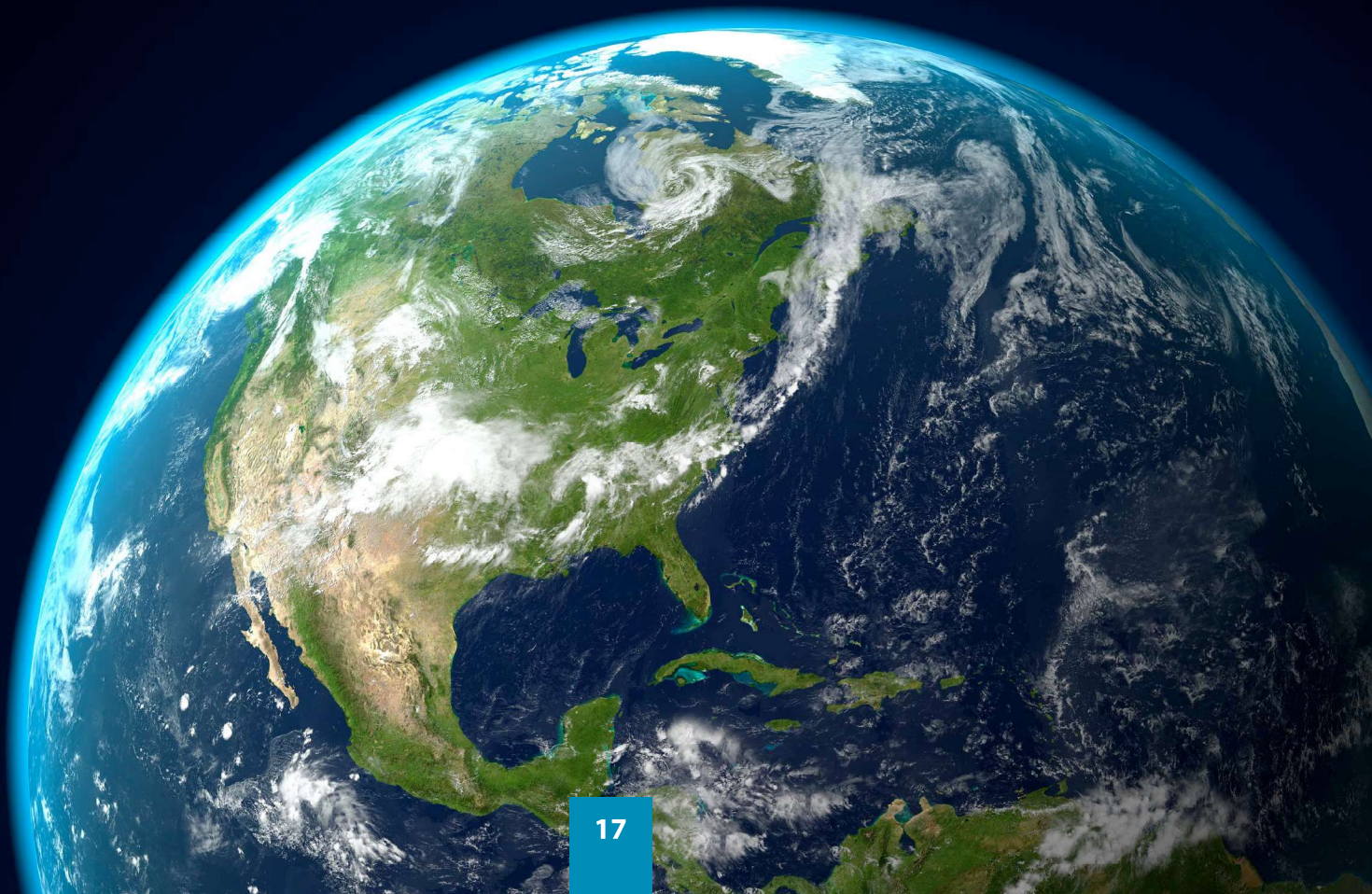
- [Wastewater Management in Guelph](#)
- [What happens to Guelph's waste?](#)



Community Call to Climate Action

The climate science is clear: the earth's temperature is rising and we are in a climate crisis. All of us need to take action to reduce GHG emissions now.

This Community Call to Climate Action urges everyone in the community including residents, neighborhood groups, businesses, developers, public and non-governmental organizations and the local government to unite, focus and act on important local climate issues. We can all do our part to reduce GHG emissions to help meet our Race To Zero commitments.





For more information

1 Carden Street
Guelph, ON N1H 3A1

519-822-1260
TTY 519-826-9771

guelph.ca

Accessible formats available upon request.

This is Exhibit "1", Tab "3", Schedule "5" referred to in the Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of Guelph, in the Regional Municipality of Wellington, before me at the City of Toronto, in the Province of Ontario, on June 27, 2025 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.



Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3

Schedule 5



Minutes of Guelph City Council

May 27, 2025, 4:00 p.m.

Council Chambers

Guelph City Hall, 1 Carden Street

Council:

Mayor C. Guthrie
Councillor P. Allt
Councillor C. Billings
Councillor L. Busuttil
Councillor L. Caron
Councillor E. Caton
Councillor K. Chew
Councillor C. Downer
Councillor D. Gibson
Councillor R. Goller
Councillor C. Klassen
Councillor M. Richardson

Staff:

T. Baker, Chief Administrative Officer
C. Clack-Bush, Deputy Chief Administrative Officer, Public Services
J. Holmes, Deputy Chief Administrative Officer, Infrastructure, Development and Environment
G. Matthews, Acting Deputy Chief Administrative Officer, Corporate Services
J. Sales, General Manager, Strategy, Innovation and Intergovernmental Services
D. McMahon, Manager, Legislative Services/Deputy Clerk
G. Meades, Acting Manager, Legislative Services/Deputy Clerk
J. Slater, Manager, Information, Privacy and Elections/Deputy Clerk
A. Dolcetti, Housing Stability Advisor
C. Murray-Sprague, Election Coordinator
S. O'Brien, General Manager, City Clerk's Office/City Clerk
G. Brennan, Council and Committee Coordinator

S. Osborn, Administrative Coordinator
A. Sandor, Council and Committee Coordinator

1. Call to Order

Mayor Guthrie called the meeting to order (4:02 p.m.)

1.1 Disclosure of Pecuniary Interest and General Nature Thereof

There were no disclosures.

2. Authority to move into closed meeting

Moved By Councillor Allt

Seconded By Councillor Busuttil

1. That the Council of the City of Guelph now hold a meeting that is closed to the public, pursuant to Section 239(2)(b) of the Municipal Act, regarding personal matters about an identifiable individual, including municipal or local board employees.

Voting in Favour: (10): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (10 to 0)

The following items were considered:

2.1 Call to Order (closed meeting)

2.2 Disclosure of Pecuniary Interest and General Nature Thereof (closed items)

2.3 Confirmation of Closed Minutes

2.4 May 2025 Public Appointments to Advisory Committees of Council, 2025-265

3. Closed Meeting Summary

Mayor Guthrie called the meeting to order (5:00 p.m.) and noted the following:

May 2025 Public Appointments to Advisory Committees of Council, 2025-265

Council made a decision, and a motion regarding this item will be considered by Council later in the meeting.

4. Open Meeting – 5:00 p.m.

4.4 Disclosure of Pecuniary Interest and General Nature Thereof

There were no disclosures.

5. Confirmation of Open Minutes

Moved By Councillor Billings

Seconded By Councillor Klassen

1. That the minutes of the open Council Meetings held April 8 and 23, 2025 and the minutes of the open Committee of the Whole meeting held April 1, 2025 be confirmed as recorded and without being read.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

6. Committee of the Whole Consent Report

The following item was extracted from the Committee of the Whole Consent Report:

Code of Conduct for Council and Local Boards - 2025-196

Moved By Councillor Allt

Seconded By Councillor Richardson

1. That the May 27, 2025 Committee of the Whole Consent Agenda identified below be adopted.

6.1 Committee of the Whole Terms of Reference Update - 2025-190, 2025-190

1. That the revised Committee of the Whole Terms of Reference, included as Attachment- 1 to report 2025-190, be approved.

6.2 2024 Year-end Operating Budget Monitoring Report and Surplus Allocation and Deficit Funding, 2025-212

1. That the 2024 tax supported operating deficit of \$397,604 be allocated to or funded from the City's reserve and reserve funds as follows:
 - a. Transfer \$12,271 to the Library Operating Contingency Reserve (102) in accordance with the request from the Library Board.
 - b. Transfer \$245,072 to the Police Operating Contingency Reserve (115) in accordance with the anticipated request from the Guelph Police Board.
 - c. Fund the deficit of \$654,948 from the Tax Rate Operating Contingency Reserve (180).
2. That the 2024 non-tax supported operating surplus of \$333,814 be allocated to or funded from the non-tax supported City reserve and reserve funds as follows:
 - a. Fund the Parking Services deficit of \$62,273 from the Parking Operating Contingency Reserve (106).
 - b. Transfer the Stormwater Services surplus of \$566,747 to the Stormwater Capital Reserve Fund (165).
 - c. Fund the Water Services deficit of \$276,756 from the Water Operating Contingency Reserve (181).
 - d. Transfer the Wastewater Services surplus of \$1,705,452 to the Wastewater Operating Contingency Reserve (182).
 - e. Fund the Building Services deficit of \$1,752,995 from the Building Services OBC Stabilization Reserve Fund (188).
 - f. Transfer the Courts Services surplus of \$153,639 to the Courts Capital Reserve Fund (120).

6.3 2024 Year-end Capital Budget Monitoring Report - 2025-215

1. That the 2025 budget adjustments in Attachment 2, Tables 4, 5 and 6 be approved.
2. That the 2026 forecasted budget of \$150,000 funded from the Parkland Dedication Reserve Fund for GG0280 Parkland Dedication By-Law Update be advanced to 2025.

3. That the 2026 forecasted budget of \$841,000 funded from the Housing Accelerator Fund for PL0086 Affordable Housing Demonstration Project (HAF-4B) be advanced to 2025.
4. That \$145,000 of the 2026 forecasted budget for FS0079 Bunker Gear be advanced to 2025 for the replacement of end-of-life Firefighter Bunker Gear.
5. That \$70,000 be transferred from the Ontario Building Code (OBC) Reserve Fund to OB0001 OBC File Digitization for completion of the project.

6.4 2024 Long-term Financial Statement: Reserves and Debt, 2025-230

1. That \$1,000,000 be transferred from the Court Contingency reserve (211) to the Courts Capital reserve fund (120) in 2025.
2. That \$2,514,340 be transferred from the Infrastructure Renewal reserve fund (150) to fund the long-term loan agreement with The Elliott Community for the 29 long-term care bed expansion, as previously approved by Council, and that the repayments of the long-term loan agreement from The Elliott Community be transferred to the Infrastructure Renewal reserve fund (150).
3. That \$862,780 be transferred from the Long-term Care DC reserve fund (364) to fund the contribution to The Elliott Community for the DC recoverable portion of the 29 long-term care bed expansion and that the previous funding for this contribution be transferred back to the Tax Operating Contingency reserve (180).

Voting in Favour: (12): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (12 to 0)

7. Items for Discussion

7.1 May 2025 Public Appointments to Advisory Committees of Council, 2025-269

Moved By Councillor Goller
Seconded By Councillor Richardson

1. That Giovanni De Sero, Carmen Loiselle, Janette Svehla, Judy Noonan, and Jacky Radmond be appointed to the Accessibility Advisory Committee for a term ending November 2026 or until such time as successors are appointed.
2. That Banji Akande, ASM Easir Arafat, Eleni Bakopoulos, Steve Donnelly, Julia Grady, Madeleine Krucker, Scarlett Raczycki, Katie Saunders, and Andi Syme be appointed to the Arts and Culture Advisory Committee for a term ending November 2026 or until such time as successors are appointed.
3. That Paul Fitzpatrick, Janet Goodfellow, Pamela Membreno, Naeem Mir, Jane Ross, James Smith, and Russell Speers be appointed to the Committee of Adjustment and Property Standards Committee for a term starting June 16, 2025 and ending November 2026 or until such time as successors are appointed.
4. That Lucas Figueiredo, Paul Blackburn, Damien Smith, Kristel Manes, Anuradha Saxena, Steve Zago, Erin Phillips, and Dennis Voss be appointed to the Economic Development and Tourism Advisory Committee for a term ending November 2026 or until such time as successors are appointed.
5. That Piper Boyd Bell, Liam Browne, Kelly Caldwell, David Cameletti, Kim Carroll, Sara Epp, Justin Grainger, Donald Mikel, and Hart Slater-Eddy be appointed to the Heritage Advisory Committee for a term ending November 2026 or until such time as successors are appointed.
6. That Keren Bromberg, Claire Brooks Finoro, Bo Cheyne, Justin Luth, Gavin Maybury, Mike Puddister, Anieca Scott, Rajul Singh, Robert Forrest Smith, Shannon Turnbull, and Laura Verharghe be appointed to the Planning, Environment and Water Advisory Committee for a term ending November 2026 or until such time as successors are appointed.
7. 7. That June Baldwin, Susan Carey, Natalia Crewson, John Dale, Eldrich Rebello, Elham Heydarigharai, Matthew Moore, Darren Shock, and Harry Young be appointed to the Transportation Advisory Committee for a term ending November 2026 or until such time as successors are appointed.

8. 8. That the City Clerk be directed to conduct further recruitment for any Advisory Committees of Council that have outstanding vacancies, as outlined in report 2025-269, dated May 27, 2025.

Voting in Favour: (12): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (12 to 0)

7.2 Addressing Gaps in Daytime Sheltering Options for Persons Experiencing Homelessness - 2025-92

The following delegates spoke:

Dean Mitchelmore
Morgan Dandie
Tay Caton
Sharon Felker
Dominica McPherson
Andrea Baker
Lorelei Root
Shelby Law

The following delegates did not speak:

Ella Elliott
Dan Loughrin
Kassie Dupuis

First Motion

Moved By Councillor Allt

Seconded By Councillor Richardson

1. That the Council of the City of Guelph now hold a meeting that is closed to the public, pursuant to Section 239(2)(f) of the Municipal Act, regarding advice that is subject to solicitor-client privilege, including communications necessary for that purpose.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

Council moved into closed session (6:02 p.m.), Mayor Guthrie called the open meeting to order (6:33 p.m.) and noted the following:

Addressing Gaps in Daytime Sheltering Options for Persons Experiencing Homelessness - 2025-92

Council received information from staff.

Second Motion

Moved By Councillor Klassen

Seconded By Councillor Goller

1. That staff be directed to proceed with a competitive procurement process for daytime shelter services and report back through the 2026 budget update.
2. That Council respectfully requests that the Mayor include funding for daytime shelter services in the 2026 budget update.
3. That Council respectfully requests the County of Wellington participate in this initiative and pay 10 per cent of the cost as a discretionary social service.

First Amendment to Second Motion

Moved By Councillor Goller

Seconded By Councillor Klassen

1. That staff be directed to use an RFP scoring criteria that includes scoring based on the proposed location(s), where if the proposed daytime shelter location(s) is not on Wyndham Street (between Wellington and Woolwich) or Carden Street, Quebec Street, Cork Street E, Macdonell Street, or Wilson Street, the proposal receives a higher location score than submissions where the proposed daytime shelter location(s) is on one of the identified streets.
2. That staff be directed to develop an RFP which requires Proponents to include the following in their proposals, without limitation:
 - The municipal address, location map, floorplan layout, and detailed description of the proposed daytime shelter location, including building(s), indoor amenities, private outdoor areas, and AODA-compliant accessibility.

- Key staff roles, job descriptions, areas of expertise and training, including health and safety, conflict resolution, and de-escalation techniques.
- Plans and resources to maintain safe operations, including facility management and operational protocols, health and safety, cleanliness, waste management, pest management, and general maintenance.
- Summary of operational policies/rules/codes of conduct for clients and staff.
- Summary of “good neighbour” approach to managing relationships with neighbours and compatibility with the surrounding community.
- Sufficient washroom facilities during hours of operation for members of the public in need, regardless of whether they are utilizing the daytime shelter services.

This motion was requested to be split into two motions.

Councillor Downer called a point of order, and asked that specific organizations not be identified in public discussion on a potential Request for Proposal (RFP). Mayor Guthrie asked that the open RFP process not be prejudiced, and cautioned that names of organizations not be discussed.

Councillor Klassen called a point of order, asking about the appropriateness of Councillor Allt's discussion. Mayor Guthrie noted that personal opinions may stand in the meeting, and asked for discussion to continue.

First Clause of First Amendment to Second Motion

Moved By Councillor Goller

Seconded By Councillor Klassen

1. That staff be directed to use an RFP scoring criteria that includes scoring based on the proposed location(s), where if the proposed daytime shelter location(s) is not on Wyndham Street (between Wellington and Woolwich) or Carden Street, Quebec Street, Cork Street E, Macdonell Street, or Wilson Street, the proposal receives a higher location score than submissions where the proposed daytime shelter location(s) is on one of the identified streets.

Voting in Favour: (10): Mayor Guthrie, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Voting Against: (2): Councillor Allt, and Councillor Caton

Carried (10 to 2)

Second Clause of First Amendment to Second Motion

Moved By Councillor Goller

Seconded By Councillor Klassen

1. That staff be directed to develop an RFP which requires Proponents to include the following in their proposals, without limitation:
 - The municipal address, location map, floorplan layout, and detailed description of the proposed daytime shelter location, including building(s), indoor amenities, private outdoor areas, and AODA-compliant accessibility.
 - Key staff roles, job descriptions, areas of expertise and training, including health and safety, conflict resolution, and de-escalation techniques.
 - Plans and resources to maintain safe operations, including facility management and operational protocols, health and safety, cleanliness, waste management, pest management, and general maintenance.
 - Summary of operational policies/rules/codes of conduct for clients and staff.
 - Summary of “good neighbour” approach to managing relationships with neighbours and compatibility with the surrounding community.
 - Sufficient washroom facilities during hours of operation for members of the public in need, regardless of whether they are utilizing the daytime shelter services.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Voting Against: (1): Councillor Busuttil

Carried (11 to 1)

Second Amendment to Second Motion

Moved By Councillor Caton

Seconded By Councillor Allt

1. That points be given to proposals located in areas with easily accessible Guelph Transit stops for routes that cover all areas of the city.
2. That points be given to proposals located in areas with topographical street/sidewalk slope and pitch consistent with accessibility standards for manual wheelchair users, using AODA ramp standards as the baseline for accessible inclines.
3. That points be given to proposals located in the areas with the highest identified need for the service, using existing data and collaboration with Wellington County.
4. That points be given to proposals within the operating area of Welcoming Streets.
5. That points be given to proposals close to existing services used by the same population to lower barriers to access.

Councillor Gibson requested that Mayor Guthrie call the vote.

This vote was requested to be split into five clauses.

First Clause of Second Amendment to Second Motion

Moved By Councillor Caton

Seconded By Councillor Allt

1. That points be given to proposals located in areas with easily accessible Guelph Transit stops for routes that cover all areas of the city.

Voting in Favour: (12): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (12 to 0)

Second Clause of Second Amendment to Second Motion

Moved By Councillor Caton

Seconded By Councillor Allt

2. That points be given to proposals located in areas with topographical street/sidewalk slope and pitch consistent with accessibility standards for manual wheelchair users, using AODA ramp standards as the baseline for accessible inclines.

Voting in Favour: (4): Councillor Allt, Councillor Busuttil, Councillor Caron, and Councillor Caton

Voting Against: (8): Mayor Guthrie, Councillor Billings, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Defeated (4 to 8)

Councillor Downer called a point of order, and asked if Council defeats these proposals, are staff still able to examine these motions as part of the RFP process. Mayor Guthrie noted that staff would examine the process with direction stemming from the main motion.

Third Clause of Second Amendment to Second Motion

Moved By Councillor Caton

Seconded By Councillor Allt

3. That points be given to proposals located in the areas with the highest identified need for the service, using existing data and collaboration with Wellington County.

Voting in Favour: (4): Councillor Allt, Councillor Busuttil, Councillor Caron, and Councillor Caton

Voting Against: (8): Mayor Guthrie, Councillor Billings, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Defeated (4 to 8)

Fourth Clause of Second Amendment to Second Motion

Moved By Councillor Caton

Seconded By Councillor Allt

4. That points be given to proposals within the operating area of Welcoming Streets.

Voting in Favour: (3): Councillor Allt, Councillor Busuttill, and Councillor Caton

Voting Against: (9): Mayor Guthrie, Councillor Billings, Councillor Caron, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Defeated (3 to 9)

Fifth Clause of Second Amendment to Second Motion

Moved By Councillor Caton

Seconded By Councillor Allt

5. That points be given to proposals close to existing services used by the same population to lower barriers to access.

Voting in Favour: (3): Councillor Allt, Councillor Busuttill, Councillor Caton

Voting Against: (9): Mayor Guthrie, Councillor Billings, Councillor Caron, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Defeated (3 to 9)

Second Motion as Amended

Moved By Councillor Goller

Seconded By Councillor Klassen

1. That staff be directed to proceed with a competitive procurement process for daytime shelter services and report back through the 2026 budget update.
2. That Council respectfully requests that the Mayor include funding for daytime shelter services in the 2026 budget update.

3. That Council respectfully requests the County of Wellington participate in this initiative and pay 10 per cent of the cost as a discretionary social service.
4. That staff be directed to use an RFP scoring criteria that includes scoring based on the proposed location(s), where if the proposed daytime shelter location(s) is not on Wyndham Street (between Wellington and Woolwich) or Carden Street, Quebec Street, Cork Street E, Macdonell Street, or Wilson Street, the proposal receives a higher location score than submissions where the proposed daytime shelter location(s) is on one of the identified streets.
5. That staff be directed to develop an RFP which requires Proponents to include the following in their proposals, without limitation:
 - The municipal address, location map, floorplan layout, and detailed description of the proposed daytime shelter location, including building(s), indoor amenities, private outdoor areas, and AODA-compliant accessibility.
 - Key staff roles, job descriptions, areas of expertise and training, including health and safety, conflict resolution, and de-escalation techniques.
 - Plans and resources to maintain safe operations, including facility management and operational protocols, health and safety, cleanliness, waste management, pest management, and general maintenance.
 - Summary of operational policies/rules/codes of conduct for clients and staff.
 - Summary of “good neighbour” approach to managing relationships with neighbours and compatibility with the surrounding community.
 - Sufficient washroom facilities during hours of operation for members of the public in need, regardless of whether they are utilizing the daytime shelter services.
6. That points be given to proposals located in areas with easily accessible Guelph Transit stops for routes that cover all areas of the city.

Voting in Favour: (12): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Gibson, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (12 to 0)

Council recessed (7:32 p.m.). Council reconvened (7.45 p.m.).

7.3 Guelph's Community Call to Climate Action, 2025-213

The following delegate spoke:

Adam Donaldson

Mayor Guthrie asked that the delegate ensure that disparaging comments are not made during delegations to Council.

The following delegate spoke:

Evan Ferrari

First Motion

Moved By Councillor Allt

Seconded By Councillor Goller

1. That Council approve staff actions to support the community in taking collective climate action as described in Guelph's Community Call to Climate Action.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

Second Motion

Moved By Councillor Goller

Seconded By Councillor Caron

1. THAT the City of Guelph formally requests the Province of Ontario, through the Ministry of Municipal Affairs and Housing, to amend the Ontario Building Code to include provisions that effectively require or create a clear pathway for the widespread adoption of energy-efficient heat pumps as a primary space heating and cooling solution in new residential and commercial constructions, and major renovations, where feasible.

2. THAT the City of Guelph formally requests the Province of Ontario to adopt a tiered building energy performance standard similar to the British Columbia Energy Step Code, providing a clear, incremental, and predictable regulatory pathway for all new buildings to achieve net-zero energy ready levels of performance by 2030 or sooner, thereby supporting a transition to a carbon-neutral future for Ontario.
3. THAT this resolution be forwarded to the Honourable Doug Ford, Premier of Ontario; Mike Schreiner, MPP for Guelph; Minister of Municipal Affairs and Housing; Minister of Energy and Mines; Minister of Environment, Conservation and Parks; Association of Municipalities of Ontario; and Federation of Canadian Municipalities.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

7.4 City Council Vacancy Declaration – Ward 6, 2025-248

Moved By Councillor Billings
Seconded By Councillor Chew

1. That City Council declare the seat of Councillor Dominique O'Rourke, Ward 6 Councillor, to be vacant per Section 262 of the Municipal Act, 2001.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

7.5 Filing of the Vacant Ward 6 Councillor Seat, 2025-264

Stephen O'Brien, General Manager, City Clerk's Office/City Clerk, spoke regarding the Filing of the Vacant Ward 6 Councillor Seat.

Moved By Councillor Allt
Seconded By Councillor Klassen

1. That the City Clerk be directed to conduct an appointment process based on an open call for nominations, as outlined in Attachment-1 to report 2025-264, as the method for filling the vacant office of Ward 6 Councillor.
2. That a Special City Council meeting be held on July 23, 2025 to consider and appoint an individual to the office of Ward 6 Councillor.
3. That the Council Vacancy Policy, included as Attachment-1 to report 2025-264, be approved.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

7.6 Code of Conduct for Council and Local Boards - 2025-196

Main Motion

Moved By Councillor Caton

Seconded By Councillor Goller

1. That the Revised Code of Conduct for Council and Local Boards, included as Attachment-1 to report 2025-196 dated May 6, 2025, be approved.

First Amendment to Main Motion

Moved By Councillor Caton

Seconded By Councillor Caron

1. Replace paragraph 2, Section 8, part I with: Where a member has chosen to enable public participation and comments on a social media account with content specific to their role as a member, the social media account will be considered a municipal public forum. Once a member establishes their social media as a municipal public forum, they cannot selectively exclude members of the public from that forum because they are critical of the member or express objectionable/contrary views.
2. Replace paragraph 3, Section 8, part I with: A member is not required to enable public participation and comments on their social media. Where a member has enabled public participation

and comments on social media with content specific to their role as member, they should exercise due restraint prior to blocking individual members of the public from viewing or commenting on their social media. A member may be justified in blocking users where necessary to protect the member's social media account by preventing it from being overrun by spam, bots, or from disseminating abusive, hateful and inciteful communication.

3. Include at the bottom of Section 8, part I: Members who have created a municipal public forum have a duty to moderate abusive, bigoted and hateful comments towards community members and groups when made aware of such comments. Moderation options vary from platform to platform and may include deleting or hiding user comments or posting with comments disabled.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

Main Motion as Amended

Moved By Councillor Caton

Seconded By Councillor Goller

1. That the Revised Code of Conduct for Council and Local Boards, included as Attachment-1 to report 2025-196 dated May 6, 2025, be approved, as amended.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

8. By-laws

Moved By Councillor Goller

Seconded By Councillor Richardson

1. That by-laws (2025)-21085, (2025)-21091 and (2025)-21092 be approved subject to Section 284.11 (4) of the Municipal Act.

Voting in Favour: (11): Mayor Guthrie, Councillor Allt, Councillor Billings, Councillor Busuttil, Councillor Caron, Councillor Caton, Councillor Chew, Councillor Downer, Councillor Goller, Councillor Klassen, and Councillor Richardson

Carried (11 to 0)

9. Adjournment

Moved By Councillor Caron

Seconded By Councillor Billings

1. That the meeting be adjourned (8:44 p.m.).

Carried

Mayor Guthrie

Stephen O'Brien - City Clerk

This is Exhibit "1", Tab "3", Schedule "6" referred to in the Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of Guelph, in the Regional Municipality of Wellington, before me at the City of Toronto, in the Province of Ontario, on June 27, 2025 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.



Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3

Schedule 6

**Minutes of Guelph City Council
Held in the Council Chambers, Guelph City Hall on
May 28, 2018 at 4:34 p.m.**

Attendance

Council: Mayor C. Guthrie
Councillor P. Allt
Councillor C. Billings
Councillor C. Downer
Councillor J. Gordon
Councillor J. Hofland
Councillor M. MacKinnon
Councillor M. Salisbury
Councillor K. Wettstein

Absent: Councillor B. Bell
Councillor D. Gibson
Councillor L. Piper
Councillor A. Van Hellemond

Staff: Mr. S. O'Brien, City Clerk
Ms. D. Black, Council Committee Coordinator

Call to Order (4:34 p.m.)

Mayor Guthrie called the meeting to order.

Authority to Resolve into a Closed Meeting of Council

1. Moved by Councillor Allt
Seconded by Councillor Downer

That the Council of the City of Guelph now hold a meeting that is closed to the public, pursuant to Section 239 (2) (b), (c), (d), (e), (f), (i) and (k) of the Municipal Act with respect to: personal matters about an identifiable individual, including municipal or local board employees; a proposed or pending acquisition or disposition of land by the municipality or local board; labour relations or employee negotiations; litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local board; advice that is subject to solicitor-client privilege, including communications necessary for that purpose; a trade secret or scientific, technical, commercial, financial or labour relations information, supplied in confidence to the municipality or local board, which, if disclosed, could reasonably be expected to prejudice significantly the competitive position or interfere significantly with the contractual or other negotiations of a person, group of persons, or organization; and a position, plan, procedure, criteria or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipality or local board.

Carried

Closed Meeting (4:37 p.m.)

Disclosure of Pecuniary Interest and General Nature Thereof

There were no disclosures.

The following matters were considered:

	Adoption of Minutes of the Closed Meeting of Council held April 23, 2018
	Downtown Guelph Business Association Board of Directors Appointment
CAO-2018.13	Employee Code of Conduct Breach
IDE-2018.73	Land Sale Transaction for 200 Hanlon Creek Blvd. between 785412 Ontario Ltd. (Everest Holdings) and the Ontario Federation of Agriculture (OFA)
IDE-2018.81	Solid Waste Resources Business Service Review Final Report – Confidential Material Recovery Facility Update
CAO-2018.14	Potential Disposition of Real Property in the Downtown
PS-2018.23	Contract for Animal Control and Pound Services

Rise and recess from Closed Meeting (6:00 p.m.)

Council recessed.

Open Meeting (6:32 p.m.)

Mayor Guthrie called the meeting to order.

Closed Meeting Summary

Mayor Guthrie spoke regarding the matters addressed in closed and identified the following:

Minutes –	Council Closed Session – April 23, 2018 These minutes were adopted by Council.
	Downtown Guelph Business Association Board of Directors Appointment Information was received and Council will report on this matter.
CAO-2018.13	Employee Code of Conduct Breach Information was received and no direction was given.
IDE-2018.73	Land Sale Transaction for 200 Hanlon Creek Blvd. between 785412 Ontario Ltd. (Everest Holdings) and the Ontario Federation of Agriculture (OFA) Information was received and no direction was given.
IDE-2018.81	Solid Waste Resources Business Service Review Final Report – Confidential Material Recovery Facility Update Information was received and no direction was given.
CAO-2018.14	Potential Disposition of Real Property in the Downtown Information was received and Council will report on this matter.

PS-2018.23

Contract for Animal Control and Pound Services

Staff were given direction on this matter.

Disclosure of Pecuniary Interest and General Nature Thereof

Councillor MacKinnon declared a pecuniary interest regarding the Downtown Guelph Business Association Board of Directors Appointment and Report IDE-2018.69 Downtown Parking Master Plan Update because he is a business owner within the downtown core.

Presentations:

2018 Access Recognition Awards

Julie Goodwin, Guelph Barrier Free Committees, Committee Member, provided details regarding each award and the following 2018 Access Recognition awards were presented by the Mayor

- Outstanding Accomplishment of an Individual: Millar Weddig
- Outstanding Contribution of an Individual: Grante Leemet and Limitless Guelph
- Outstanding Contribution of an Individual: Josh Cassidy
- Outstanding Contribution of a Business: Guelph Public Library – Outreach Services

Confirmation of Minutes

2. Moved by Councillor Gordon
Seconded by Councillor Hofland

That the minutes of the Council Meetings held April 9, 18, and 23, 2018 and the Committee of the Whole meetings held May 7, 2018 be confirmed as recorded and without being read.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

Committee of the Whole and Council Consent Reports

The following items were extracted:

IDE-2018.69	Renewable Sources of Energy
	Downtown Parking Master Plan Update
	Red Light Cameras
IDE-2018-74	Land Sale Transaction for 200 Hanlon Creek Blvd.
	between 785412 Ontario Ltd. (Everest Holdings) and the
	Ontario Federation of Agriculture (OFA)

Balance of Committee of the Whole and Council Consent Items

3. Moved by Councillor Billings
Seconded by Councillor Downer

That the balance of the, 2018 Committee of the Whole and Council Consent Reports as identified below, be adopted:

IDE-2018.58 2017 Building Permit Revenue and Expenditures, Building Stabilization Reserve Fund and Annual Setting of Building Permit Fees

That Council approve the recommended building permit fees, included as Attachment 2, report IDE-2018-58 titled "2017 Building Permit Revenue and Expenditures, Building Stabilization Reserve Fund and Annual Setting of Building Permit Fees" dated May 7, 2018, effective June 1, 2018.

IDE-2018.38 139 Morris Street Brownfield Tax Increment Based Grant Deadline Extension

1. That the request to extend the deadline for project completion for the Brownfield Tax Increment Based Grant applying to 139 Morris Street from October 28, 2018 to April 28, 2021 be approved.
2. That staff be directed to prepare an amendment to the Tax Increment Based Grant Agreement between the City and 139 Morris Street Ltd., to the satisfaction of the General Manager of Planning, Urban Design and Building Services, the City Solicitor and the City Treasurer.
3. That the Mayor and Clerk be authorized to execute the amendment to the Tax Increment Based Grant Agreement.

IDE-2018.62 Sign By-law Variances – 1515 Gordon Street

That the request for variances from Sign By-law Number (1996)-15245, as amended, to permit an illuminated freestanding sign to have a sign area of 4.53m² and a height of 4.65m above the adjacent roadway at 1515 Gordon Street, be approved.

IDE-2018.56 Community Energy Initiative Update

1. That Council acknowledge the role of Our Energy Guelph (OEG) as the implementer of the Community Energy Initiative going forward in principle.
2. That Council approve the City of Guelph's continued association with OEG as a primary stakeholder and partner.
3. That Council acknowledge the target that OEG has proposed, namely for Guelph to become net zero carbon by 2050.

4. That Council direct staff to provide a report in Q1 of 2019 with specific corporate targets for GHG emissions and energy consumption taking into consideration the findings from the CEI update for council approval.
5. That Council direct staff to provide a detailed report recommending specific initiatives that are aligned with the CEI update, complete with business cases to support those initiatives, to be considered as part of the 2019 operating and capital budget process for Council approval.

IDE-2018.68 Asset Management Program Progress and Policy Update

1. That the report "Asset Management Program Progress and Policy Update," dated May 7, 2018, be received and that staff be directed to proceed with the work plan as outlined.
2. That Council approve the updated 2018 Strategic Asset Management Policy.

CS-2018.14 2017 Operating Variance Report and Surplus and Deficit Allocation

1. That the report titled "2017 Operating Variance Report and Surplus and Deficit Allocation", dated May 7, 2018, be received.
2. That the Tax Supported surplus of \$3,546,195 be allocated to the reserves and reserve funds as follows:

Tax Rate Operating Contingency Reserve (180)	\$1,064,826
City-owned Contaminated Sites Reserve Fund (155)	\$1,000,000
Efficiency, Innovation and Opportunity Fund (351)	\$1,000,000
WSIB Reserve (330)	\$231,369
Police Operating Contingency Reserve (115)	\$150,000
Affordable Housing	\$100,000
Total	\$3,546,195

3. That the Water Services surplus of \$745,149 be allocated to the Water Capital Reserve Fund (152).
4. That the Wastewater Services surplus of \$2,636,206 be allocated to the Wastewater Capital Reserve Fund (153).
5. That the Stormwater Services surplus of \$971,110 be allocated as follows:

Stormwater Contingency Reserve (359)	\$321,900
Stormwater Capital Reserve Fund (165)	\$649,210
Total	\$971,110

6. That the Ontario Building Code (OBC) deficit of \$35,319 be funded from the Building Services OBC Stabilization Reserve Fund (188).

7. That the Court Services deficit of \$51,680 be funded from the Court Contingency Reserve (211).

CS-2018.16 2017 Reserve and Reserve Fund Statement

1. That the City's General Reserve and Reserve Fund Policy be amended to reflect the following as at December 31, 2017:
 - a. The addition of the Paramedic Services Provincial Capital Reserve Fund (360);
 - b. The consolidation of the Police Equipment Reserve Fund (115) into the Police Capital Reserve Fund (158);
 - c. The repurposing of the Police Equipment Reserve Fund (115) to a Police Operating Contingency Reserve; and
 - d. The addition of the Library Operating Contingency Reserve (102).
2. That effective January 1, 2018, the Transportation Demand Management Reserve Fund (350) and the Information Technology Reserve Fund (210) be closed and removed from the General Reserve and Reserve Fund Policy.
3. That \$813,053 be transferred from Compensation Contingency Reserve (131) to the WSIB Reserve (330) to align these reserves with the targets identified in the General Reserve and Reserve Fund Policy.
4. That the Waterworks Capital Reserve Fund (152) and the Waterworks Contingency Reserve (181) be renamed Water Capital Reserve Fund (152) and Water Contingency Reserve (181).

CS-2018-49 Delegation of Authority for the Period of Restricted Acts after Nomination Day for the 2018 Municipal Election

That a by-law be enacted to delegate authority to the Chief Administrative Officer in the event of a Restricted Acts Period, or Lame Duck Council, in accordance with ATT-1 to Report CS-2018-49, dated June 5, 2018.

CS-2018-50 Municipal Election Compliance Audit Committee

1. That a joint Municipal Election Compliance Audit Committee be established for the 2018-2022 term of Council in accordance with the draft Terms of Reference in ATT-1 to report CR-2018-50, 2018-2022 Municipal Election Compliance Audit Committee.
2. That the Clerk be delegated authority to select and appoint Committee Members and that Council be advised of the appointments by way of an Information Report once members have been selected.
3. That the Clerk be delegated authority to revise the Terms of Reference throughout the term of the Committee in accordance with other participating municipalities.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

Items for Discussion

Red Light Cameras

4. Moved by Councillor Downer
Seconded by Councillor Allt

That staff, in consultation with Guelph Police Services, be directed to investigate the process to implement Red Light Cameras in the City of Guelph which would include, but not be limited to, capital and operational costs including a public communications plan and a recommendation regarding the use of red light cameras as is applicable to the City of Guelph based upon a review and assessment of intersection collisions and report back to Council in early Q1 2019.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (10)

Voting Against: Councillor Gibson (1)

Carried

IDE-2018-12 Solid Waste Resources Business Service Review Final Report

Presentation:

Scott Stewart, Deputy CAO, Infrastructure, Development and Enterprise provided introductory remarks regarding the Solid Waste Resources Business Service Review Final Report.

Katherine Gray, Program Manager, Business Process Management explained the five phases of the review.

Cam Walsh, Divisional Manager, Solid Waste Resources explained the eleven recommendations within the report.

Katherine Gray, Program Manager, Business Process Management summarized the key impacts and advised of next steps.

Busatto, General Manager, Environmental Services advised that the review has fulfilled its purpose and staff have gained valuable knowledge from the review to move forward productively.

The following delegation spoke to this item:

Paul Clulow, President CUPE 241, City of Guelph

5. Moved by Councillor Hofland
Seconded by Councillor Piper

That the report IDE-2018-12 "Solid Waste Resources Business Service Final Report" dated May 28, 2018, be received and that staff be directed to proceed with the implementation of the recommendations.

Amendment

6. Moved by Councillor Billings
Seconded by Councillor Piper

That where there are financial implications, they be identified in the budget process as outlined in the report for Council approval.

Voting in Favour: Mayor Guthrie, Councillors Billings, Gibson, MacKinnon and Piper (5)

Voting Against: Councillors Allt, Downer, Gordon, Hofland, Salisbury and Wettstein (6)

Defeated

Main Motion

7. Moved by Councillor Hofland
Seconded by Councillor Piper

That the report IDE-2018-12 "Solid Waste Resources Business Service Final Report" dated May 28, 2018, be received and that staff be directed to proceed with the implementation of the recommendations.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

The meeting recessed at 8:05 and resumed at 8:15 p.m

Special Resolution:

8. Moved by Councillor Gibson
Seconded by Wettstein

That the report IDE-2018-12 "Solid Waste Resources Business Service Final Report" dated May 28, 2018, be received and that staff be directed to proceed with the implementation of the recommendations.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

PS-2018.22 Guelph Transit – Route 3

The following delegations spoke to this item:

Trevor Price
Melissa Otter and Sian Matway
Justin Staines
Steven Petric

9. Moved by Councillor Hofland
 Seconded by Councillor Allt

That as of September 3, 2018 staff be directed to revert Route 3 service levels back to the September 2017 schedule and that the operating impact for 2018 be funded from the Tax Rate Operating Contingency Reserve.

Voting in Favour: Councillors Allt, Downer, Gordon, Hofland, Piper, Salisbury and Wettstein (7)

Voting Against: Mayor Guthrie, Councillors Billings, Gibson and MacKinnon (4)

Carried

Renewable Sources of Energy

10. Moved by Councillor Piper
 Seconded by Councillor Hofland

1. That the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Amendment

11. Moved by Councillor Gibson
 Seconded by Councillor Billings

1. **As it aligns with long-term Provincial energy planning,** that the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Point of Order

Councillor Allt raised a point of order regarding whether comments being made by Councilor Gibson were pertinent to the subject matter and the Mayor ruled the comments were appropriate.

Amendment

12. Moved by Councillor Gibson
Seconded by Councillor Billings

1. **As it aligns with long-term Provincial energy planning**, that the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Voting in Favour: Mayor Guthrie, Councillors Billings, Gibson and MacKinnon (4)

Voting Against: Councillors Allt, Downer, Gordon, Hofland, Piper, Salisbury and Wettstein (7)

Defeated

Main Motion

13. Moved by Councillor Piper
Seconded by Councillor Hofland

1. That the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

IDE-2018.69

Downtown Parking Master Plan Update

Councillor MacKinnon did not speak or vote on this matter due to his declared pecuniary interest.

14. Moved by Councillor Downer
Seconded by Councillor Hofland

1. That a Downtown Parking Committee consisting of representatives from business, community groups, residents and City staff be implemented to discuss and review downtown parking programs.
2. That staff be directed to use Alternative C within report IDE-2018.69 Downtown Parking Master Plan Update (blended tax and fee support) as the funding model with a review to be conducted in five years.

Amendment

15. Moved by Councillor Wettstein
Seconded by Councillor Gibson

1. That a Downtown Parking Committee consisting of representatives from business, community groups, residents and City staff be implemented to discuss and review downtown parking programs.
2. That staff be directed to use Alternative C within report IDE-2018.69 Downtown Parking Master Plan Update (blended tax and fee support) as the funding model with a review to be conducted **within** five years.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

Main Motion as Amended

It was requested that the clauses be voted on separately.

16. Moved by Councillor Wettstein
Seconded by Councillor Gibson

That a Downtown Parking Committee consisting of representatives from business, community groups, residents and City staff be implemented to discuss and review downtown parking programs.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

17. Moved by Councillor Wettstein
Seconded by Councillor Gibson

That staff be directed to use Alternative C within report IDE-2018.69 Downtown Parking Master Plan Update (blended tax and fee support) as the funding model with a review to be conducted within five years.

Voting in Favour: Mayor Guthrie, Councillors Allt, Downer, Gordon, Hofland, Piper and Wettstein (7)

Voting Against: Councillors Billings, Gibson and Salisbury (3)

Carried

Councillor Mark MacKinnon Request for Additional Training Funding to Attend AMO August 19-22, 2018.

Councillor MacKinnon declared a pecuniary interest and did not speak or vote on this amendment.

18. Moved by Councillor Hofland
Seconded by Councillor Gordon

That Councillor MacKinnon be authorized to exceed his 2018 funding allocation in the amount of \$3, 250.00 in the amount of \$1,500.00 in order to attend the AMO 2018 conference in Ottawa, august 19-22, 2018.

Voting in Favour: Mayor Guthrie, Councillors Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (9)

Voting Against: Councillor Allt (1)

Carried

**IDE-2018-74 Land Sale Transaction for 200 Hanlon Creek Blvd.
between 785412 Ontario Ltd. (Everest Holdings) and the
Ontario Federation of Agriculture (OFA)**

19. Moved by Councillor Billings
Seconded by Councillor Gibson

1. That the City's Option to Repurchase registered November 28th, 2014 as Instrument No. WC420339 agreed to in the Agreement of Purchase and Sale between the City and 785412 Ontario Ltd. (Everest Holdings) for a property at 200 Hanlon Creek Boulevard, be waived in order to permit the sale of these lands to the Ontario Federation of Agriculture (OFA).
2. That the terms of Option to Repurchase condition in effect against OFA be revised in order to extend the Start Construction deadline to June 2019 and the expiration date to June 2022.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

Two-Way All-Day GO Rail Service and High Speed Rail to Waterloo Region

20. Moved by Councillor Billings
Seconded by Councillor MacKinnon

1. That the City of Guelph calls upon all political parties at the provincial and federal levels governments to remain committed on both Two-Way All-Day GO rail service from Toronto to Waterloo region by 2024 and to move forward to bring Canada's first High Speed Rail line from Toronto to London in 2025.
2. That a copy of the resolution be sent to the Prime Minister of Canada, leaders of the Ontario Liberal Party, the Ontario Progressive Conservative Party, the Ontario New Democratic Party, and the Green Party of Ontario, the local MPs and MPPs, the Association of Municipalities of Ontario, the Region of Waterloo, local area municipalities along the proposed Two-Way All-Day GO rail service and High Speed Rail route.

Voting in Favour: Mayor Guthrie, Councillors Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper and Wettstein (9)

Voting Against: Councillors Allt and Salisbury (2)

Carried

Downtown Guelph Business Association Board of Directors Appointment

Councillor MacKinnon did not speak or vote on this matter due to his declared pecuniary interest.

21. Moved by Councillor Gibson
Seconded by Councillor Piper

That Will MacTaggart be appointed to the Downtown Business Association for a term ending November, 2018, or until such time as a successor is appointed.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, Piper, Salisbury and Wettstein (10)

Voting Against: (0)

Carried

Potential Disposition of Real Property in the Downtown

22. Moved by Councillor Allt
Seconded by Councillor Salisbury

That the City Solicitor be authorized to negotiate, approve, and execute an agreement of Purchase and Sale to sell the lands known as the "Old Quebec Street Mall Food Court", under substantially the same terms and conditions as described in Report Number CAO-2018-14.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

By-laws

23. Moved by Councillor Hofland
Seconded by Councillor Gordon

That By-laws Numbered (2018) - 20279 to (2018) - 20285, inclusive, are hereby passed.

Voting in Favour: Mayor Guthrie, Councillors Allt, Billings, Downer, Gibson, Gordon, Hofland, MacKinnon, Piper, Salisbury and Wettstein (11)

Voting Against: (0)

Carried

Mayor's Announcements

The Mayor read an announcement provided by Councillor Van Hellemond recognizing that George McPhee and Brian McClelland, the two General Managers of the teams vying for the Stanley Cup are from Guelph and are members of the Guelph Sports Hall of Fame and congratulated them and wished them well.

Adjournment (10:08 p.m.)

24. Moved by Councillor Piper
Seconded by Councillor Salisbury

That the meeting be adjourned.

Carried

Minutes to be confirmed on June 25, 2018.

Mayor Guthrie

Stephen O'Brien - City Clerk

This is Exhibit "1", Tab "3", Schedule "7" referred to in the Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of Guelph, in the Regional Municipality of Wellington, before me at the City of Toronto, in the Province of Ontario, on June 27, 2025 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.



Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3

Schedule 7

Staff Report



To	Committee of the Whole
Service Area	Infrastructure, Development and Enterprise Services
Date	Monday, May 6, 2019
Subject	Corporate 100% Renewable Energy Target By 2050
Report Number	IDE-2019-44

Recommendation

1. That the Corporate 100% Renewable Energy Target (100RE Target) definition be received and adopted;
 2. That staff be directed to develop a capital reserve fund strategy to support the Corporate energy optimization projects through the 2020 capital budget process;
 3. That the capital and operating costs to enable progress towards the 100RE Target be referred to the 2020 budget process; and
 4. That staff provide a Corporate Energy Progress Report on an annual basis.
-

Executive Summary

Purpose of Report

- To respond to the May 28, 2018 and June 26, 2017 (Clause 1) council motions;
- To clearly define the Corporate 100% Renewable Energy Target (100RE Target);
- To detail how to effectively strive towards the 100RE Target;
- To identify capital budget planning impacts;
- To identify operating resource needs;
- To recommend a process for the review of new program and policy development initiatives through the establishment of a Corporate Energy Management System.

Key Findings

- The 100RE Target has been clearly defined in this report;
- An energy management system is recommended to effectively move the Corporation towards achieving the 100RE Target. Critical items include:
 - Commitment from top management;
 - Annual reviews for continuous improvement;
 - Training and awareness building for staff;
 - Regular communication of results to the entire Corporation;
- Over 23% of the Corporation's energy use is supplied by renewable energy sources;
- Adopting the 100RE Target and the methodology of prioritizing energy conservation is a key pathway towards significantly reducing Corporate carbon emissions.

Financial Implications

A pathway to the 100RE Target will require both human and fiscal resources. A dedicated project manager is needed to work with our service delivery managers and make incremental change over time and to consider energy management functionality on projects across the City. This project management position will be referred to the 2020 operating budget process.

From a capital budget perspective, staff recommend that at least \$500,000 on an annual basis be dedicated to fund energy management projects. To support the 100RE Target, a Corporate reserve fund strategy will be required in order to report and account for initiatives across the City. Similar to the City Building, Growth and Infrastructure Renewal Reserve Funds already in place, staff are considering a new reserve fund for 100RE. This estimated \$500,000 is a mix of both tax and non-tax supported funding and the division of this funding requires further analysis. The allocation of these funds to capital projects will occur through the capital budget process and will be identified through an annual energy review and appropriate business case justification. This capital funding allocation will also be considered through the 2020 operating tax and non-tax budgets.

Report

Background

At the Council meeting on May 28, 2018, the following motion was passed:

1. That the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Prior to the above motion, at the June 26, 2017 Council meeting, Council had directed staff to:

1. Explore pathways for transitioning the Corporation to net zero, or similar, low carbon designation;

The purpose of this report is to directly address the May 28, 2018 motion and provide further detail on the Corporate 100% Renewable Energy Target (100RE Target) for the Corporation of the City of Guelph (the Corporation). Given the similar nature of both motions, the June 26, 2017 – Clause 1 motion will also be addressed through this report.

What is 100% Renewable Energy?

As a general guideline, a 100% renewable energy target is fully achieved when the annual energy consumed by a defined area is equal to or exceeded by the amount of renewable energy generated within or imported into the defined area.

The above is a broad definition and is intended to be further defined by the organization adopting this target. For an organization to be effective in achieving a target, the organization must first clearly define the target. Setting this foundation will enable the organization to make strategic decisions to progress towards the target.

The City of Guelph's Corporate 100% Renewable Energy Target – Defined

As per the Council May 28, 2018 motion, the City of Guelph's Corporate 100% Renewable Energy Target (100RE Target) is as follows:

- **"The Corporation will strive to achieve one hundred percent of its energy needs through renewable sources by 2050"**

This is further defined as, the Corporation's annual (calendar year) energy consumption is to be equal to or less than the amount of renewable energy generated within or imported into the defined scope and boundary.

It is to be recognized that striving towards the 100RE Target in the proposed manner (detailed later in this report) will be a key pathway towards significantly reducing Corporate carbon emissions.

Timing

The Corporation will strive to improve its energy performance towards the 100RE Target and is to be achieved by 2050.

Scope and Boundaries

The system scope and boundaries of the 100RE Target are to be clearly defined to accurately track progress against the target. The system scope and boundaries are illustrated in Figure 1, and will include the following:

- Corporate facility energy use
 - Building systems;
 - Process systems;
 - Streetlights;
- Corporate fleet vehicle energy use;
- Renewable energy generated by the Corporation;
- Renewable energy imported into the scope and boundaries.

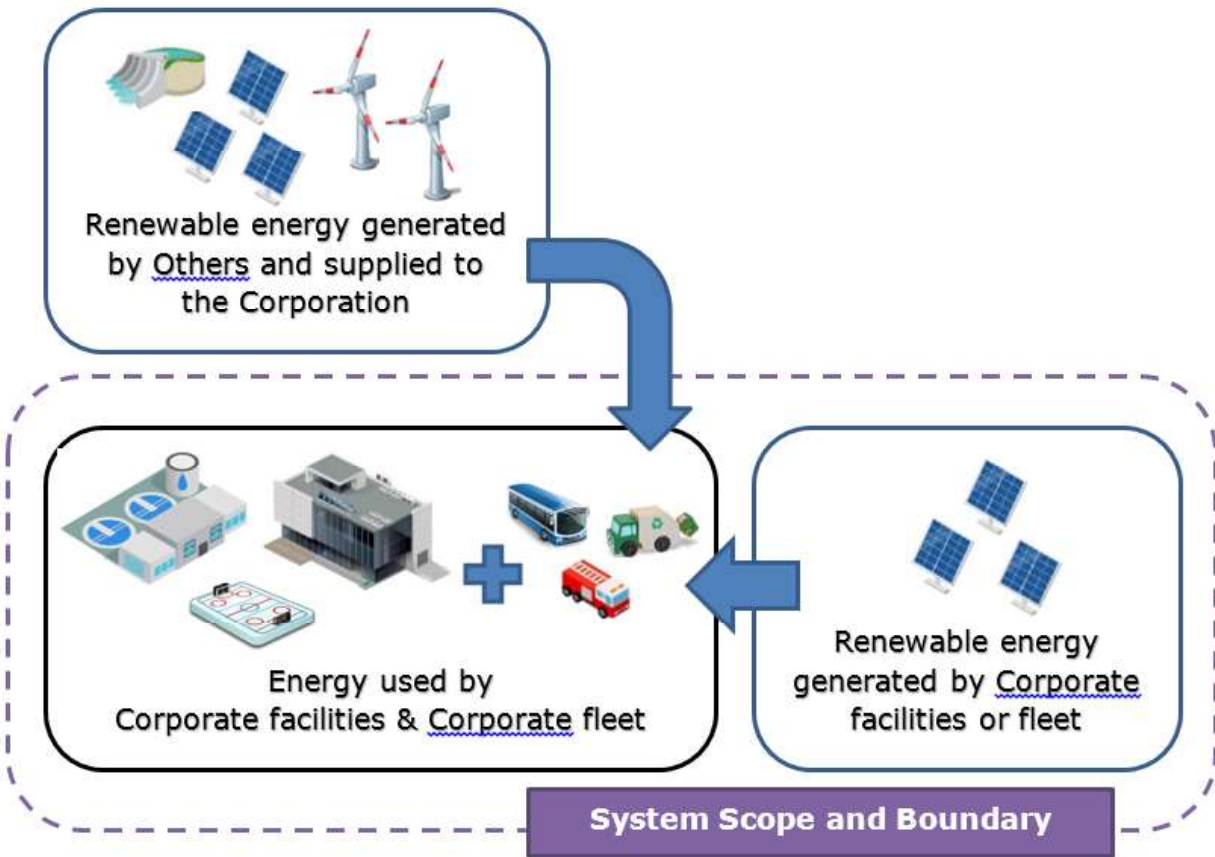


Figure 1: Corporate energy system scope and boundaries

Types of energy supplies

The Corporation uses different types of energy supplies. Kilowatt-hour equivalent (kWhe) will be used as the common unit of energy for accounting purposes and measuring performance against the 100RE Target.

The following types of energy supplies are included within the 100RE Target:

Table 1: Types of energy supplies

Energy supply	Typical unit of measure	Equivalent energy content ¹ (kWh _e /unit of fuel)
Electricity	kWh (kilowatt-hours)	1.00
Natural gas	m ³ (cubic metres)	10.78
District energy (heating and cooling)	MMBtu (million British thermal units)	293.07
Propane	L (litres)	7.07
Diesel	L	10.64
Gasoline	L	9.33
Digester gas	m ³	6.76

Types of Renewable Energy Sources

There are several types of renewable energy sources. Energy supplies from the following sources will be recognized as renewable energy supplies:

- Hydro
- Wind
- Biofuel (includes digester gas, biodiesel and ethanol)
- Solar

Energy accounting principles

Energy accounting will consider the ratio of the total renewable energy supplied to or generated by the Corporation to the total energy consumed by the Corporation.

$$\frac{\text{Total renewable energy supplied to or generated by the Corporation}}{\text{Total energy consumed by the Corporation}} = \text{Corporate energy percentage renewable}$$

Equation 1: 100RE Target calculation

Total Energy Consumed:

This is the total energy consumed by the Corporation as defined by the scope and boundary. This will be based strictly on utility bills, metered data and invoices from bulk fuel purchases.

¹ Source: Energy Units and Calculators Explained, US Department of Energy, 2017

Total Renewable Energy:

Energy supplies can be broken down into two categories - (i) supplied to; and (ii) generated by.

(i) Supplied to -

- As mentioned, the Corporation imports and consumes different types of energy supplies from different energy sources. The imported energy is from both renewable and non-renewable sources. The imported renewable energy supplies will be accounted for based on the proportion of renewable energy of the given energy source type for that year. For example, if Ontario's annual electrical energy² is supplied by 30% renewable sources and 70% non-renewable sources, then the Corporation will consider 30% of the electricity imported for that same year to be supplied by renewable sources.

(ii) Generated by -

- Renewable energy generation within the boundary will be considered as 100% renewable energy generation for the Corporation.
- This would include Feed-In-Tariff (FIT) and net-metered situations. Care is to be taken that double accounting does not occur.

Current State

Based on the 100RE Target definition and the accounting principles, the current state (2018 calendar year) of the Corporation is as follows:

² Independent Electricity System Operator (IESO) releases an annual report of transmission connected electricity supply detailing the proportion of electricity supplied by each different renewable and non-renewable resource.

100RE Target Performance Tracking

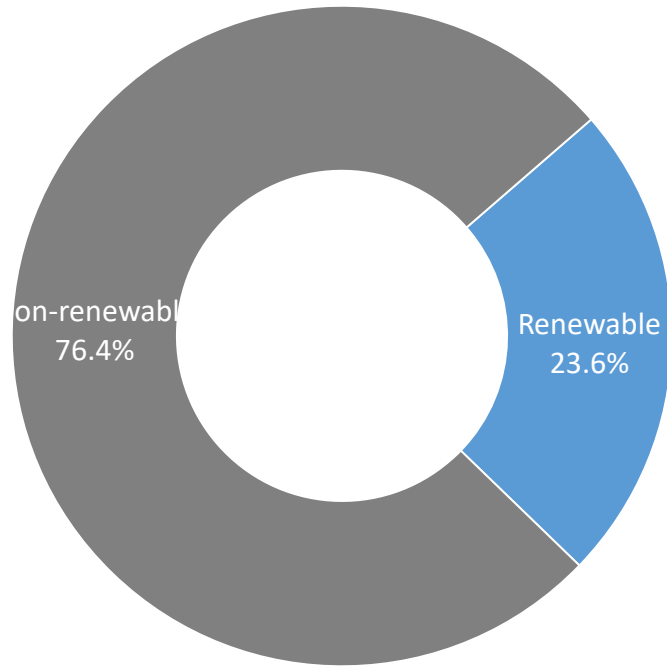


Figure 2: 2018 Corporate energy 100RE target performance

As seen in Figure 2, over 23% of the Corporation's total energy consumption is currently sourced from renewable energy sources.

The renewable sources include:

Table 2: Corporate renewable energy supplies

Renewable Energy Source	Location	Ownership	Renewable Energy Amount (kWh _e)	Percent Contribution
Multiple	Electricity Grid	IESO	18,379,539	49.3%
Solar Photovoltaics	<ul style="list-style-type: none"> • 45 Municipal • Fire Hall #3 • Fire Hall #5 • Fire HQ • Lawn Bowling Club • Lyon Park Pool • River Run Centre • Speedvale Tower 	Corporate	78,299	0.2%
Solar Thermal	<ul style="list-style-type: none"> • Clair Road Emergency Services Centre • Fire HQ • River Run Centre • Transit Garage 	Corporate	6,000 (estimated)	0.02% (estimated)
Digester Gas	Wastewater Treatment Plant	Corporate	16,427,169	44.0%
Biodiesel	Fuel Supply	Fuel Supplier	1,613,076	4.3%
Ethanol	Fuel Supply	Fuel Supplier	794,477	2.1%
Total	n/a	n/a	37,298,560	100%

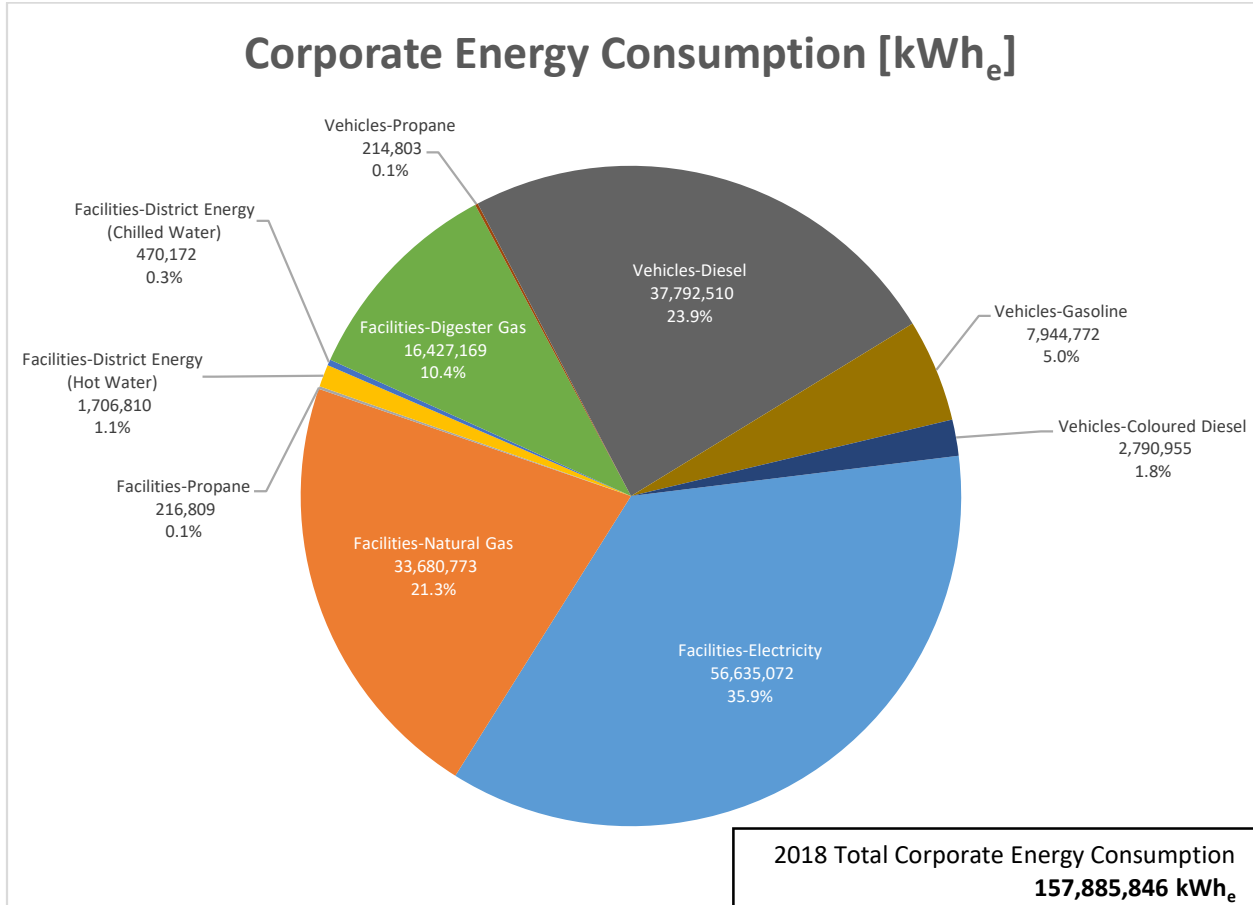


Figure 3: Corporate energy consumption

The breakdown of total energy consumption can be seen in Figure 3. Nearly 70% is attributed to facility and infrastructure energy use and over 30% to vehicle energy use. The highest energy type consumed by the Corporation is electricity followed by diesel fuel and natural gas.

Working towards 100% renewable (next steps)

The following model is to be adopted to effectively strive towards the 100RE Target.

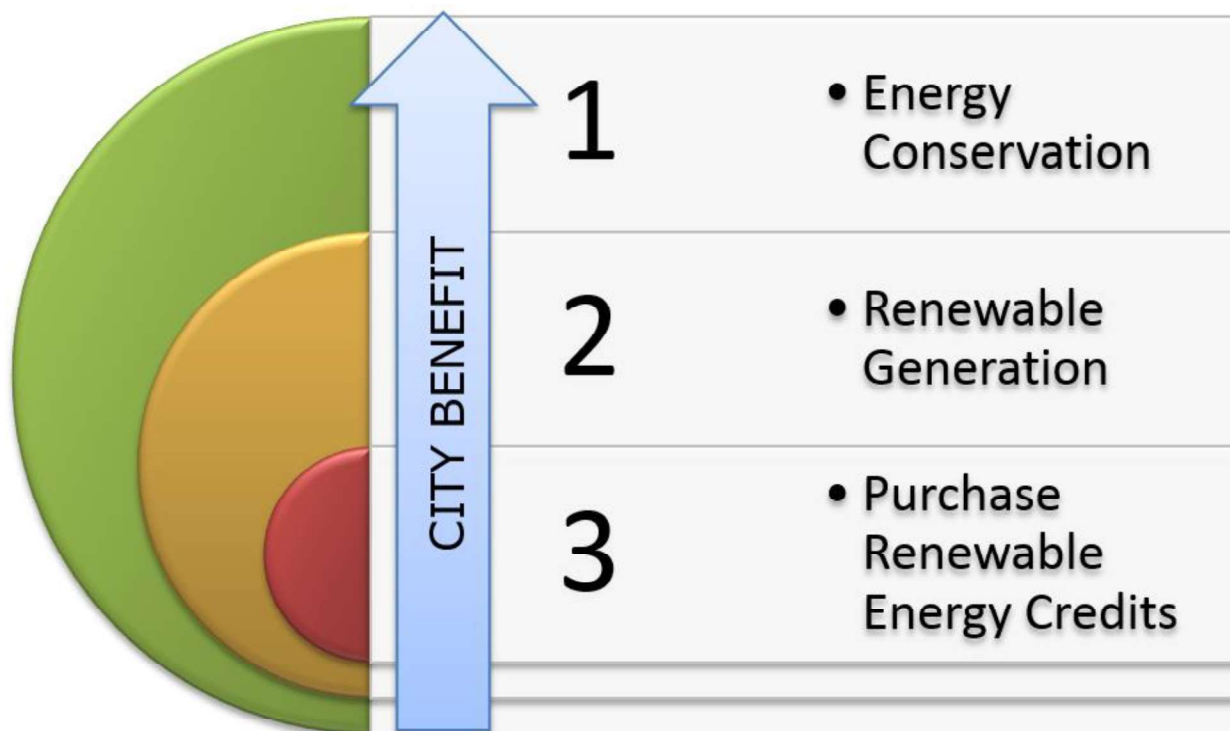


Figure 4: Corporate 100RE model

1. **Energy conservation** – priority is to be placed on energy conservation efforts. This would include operational and capital activities. By focusing on conservation first, the Corporation can right-size operations, reduce utility costs and carbon emissions, while avoiding the purchase of unnecessary renewable generation or renewable energy credits.
2. **Renewable generation** – this is to be a secondary consideration following energy conservation. Renewable generation is to provide renewable energy supplies for Corporate energy consumption.
3. **Purchasing renewable energy credits** – renewable energy credits (RECs) are paying a premium on top of standard electricity, natural gas and other fuel utility costs to a third party. The third party will invest these funds in renewable energy generation projects (likely in other regions). In the event that RECs are purchased, the third party offerer must be accredited with all RECs validated. At time of writing, the premium for renewable energy credits is in the range of 17% to 52% of utility costs. This should be used as a last resort as there is no long-term benefit to the Corporation.

Establish Corporate Energy Management System

A systematic continuous-improvement approach to manage Corporate energy use is needed to reach the 100RE goal. The Corporate Energy Management System (EnMS) should include the following critical elements:

- Corporate EnMS policy
 - Includes a commitment to continuous improvement in the Corporate energy performance;
 - Includes a commitment to ensure the availability of information and necessary resources;
 - Documented and communicated at all levels within the organization

- Top management support
 - Executive team support of the Corporate EnMS policy;
 - Top management to communicate the importance of energy management to those in the organization;
 - Top management to conduct regular (at least annual) reviews of the Corporate EnMS and its effectiveness and identifying and addressing continuous improvements;
- Clear definition of the 100RE Target and stated objectives that move the organization towards the 100RE Target;
- Use of data to better understand and make decisions about energy use;
- Measurement and communication of the Corporate energy performance results to the entire organization;

Capital budget planning impact

The Corporate Energy division works closely with the different City departments to integrate energy efficiency thinking into capital projects. It is through these partnerships that the Corporate Energy division gain a better understanding of the facilities and processes, and that the Corporation can achieve the 100RE goal.

Capital projects generally exist in three different manners:

- Planned lifecycle replacement/retrofit
 - The Corporate Energy division must continue to actively participate in the capital planning and review process. This is to identify key projects where energy efficiency measures are to be integrated into the design to improve the operations that will impact the Corporation's energy consumption.
- New construction
 - The Corporate Energy division should continue to provide subject matter expertise for new construction projects so that energy efficient design can be effectively incorporated. As new construction projects come online, the Corporate energy consumption will increase. High energy standards should be applied effectively to ensure the energy impacts are managed and align with the 100RE Target and throughout the life of the asset.
- Energy optimization projects
 - These projects are identified when conducting energy reviews of Corporate facilities and processes with the expert staff within different departments. Once again, by gathering an understanding of the business needs of the facility or process, the energy management lens can be applied and identify changes to optimize a process while reducing energy consumption. To progress towards the 100RE Target, the Corporation must commit capital funding towards energy optimization. The projects are to be evaluated based on energy savings and business case.

It is proposed that a dedicated 100RE Reserve Fund be investigated and considered through the 2020 budget process. The 100RE Reserve Fund will be designed to provide capital funding support for the implementation of Corporate energy optimization capital projects as detailed above.

- Near term, 100RE funding is estimated to be \$500,000 for 2020, and at least \$500,000 per year for 2021 and 2022. This \$500,000 is a mix of both tax

and non-tax supported funding. The initial amount of \$500,000 is to be used to implement Corporate energy optimization projects and is based on targeting 1,000,000 kWh_e annual reduction and assuming an average energy utility rate of \$0.10 per kWh_e with an average 5 year financial payback.

- As mentioned, annual Corporate EnMS reviews are to be held and will include a report of projects implemented, amount of capital mobilized, estimated energy savings, expected project paybacks, and future projects and capital requests. Based on the review, 100RE energy optimization capital funding will be adjusted accordingly.
- The following project priorities are envisioned for 2020 and 2021 to enable progress to the 100RE Target:

Table 3: Envisioned 2020 and 2021 Corporate Energy projects

Proposed project	Estimated energy savings [kWh _e]	Estimated Individual Project 100RE Target Contribution	Estimated Capital Cost	Project Type
Wastewater Aeration Upgrades	6,746,178	1.05%	\$3,850,600 ³	Energy Conservation
5 Whole Building Retro-commissioning	375,000	0.06%	\$175,000	Energy Conservation
5 Whole Building Lighting Retrofits	500,000	0.08%	\$375,000	Energy Conservation
180 kW Solar PV Installation	198,000	0.13%	\$450,000	Renewable Generation
Total - 100RE Funded Projects	1,073,000	0.26%	\$1,000,000	n/a
Total - All Listed Projects	7,819,178	1.31%	\$4,850,600	n/a

Operating resource needs

To date, the Corporate Energy division has done an effective job of building relationships with the various departments throughout the Corporation and implementing energy projects. The Corporate Energy division is currently made up of the Corporate Energy, Program Manager and utilizes a Project Manager (contract position) from the Facilities Management department. To effectively move the organization towards the 100RE Target, additional Corporate Energy resources are required:

³ Wastewater Services funded project

- Hire an additional Project Manager for the Corporate Energy division. Have this position as a permanent full-time position.

The following tasks are to be fulfilled by the Corporate Energy division resources:

- Collaborate and support staff to apply energy management into daily operations and maintenance activities;
- Energy review and advisory of asset renewal projects;
- Energy review and advisory of new construction projects;
- Project development in partnership with other departments of energy optimization projects;
- Project management for energy optimization project implementation;
- Effective handover and ongoing support to energy optimization project users and after projects are implemented;
- Energy data management
- measure and track Corporate energy performance;
- inform decision making;
- Communicate 100RE performance;
- Provide awareness training to all staff of the Corporate EnMS and 100RE Target;
- Maintain the Corporate EnMS.

Financial Implications

A pathway to the 100RE Target will require both human and fiscal resources. A dedicated project manager is needed to work with our service delivery managers and make incremental change over time and to consider energy management functionality on projects across the City. This project management position will be referred to the 2020 operating budget process.

From a capital budget perspective, staff recommend that at least \$500,000 on an annual basis be dedicated to fund energy management projects. To support the 100RE Target, a Corporate reserve fund strategy will be required in order to report and account for initiatives across the City. Similar to the City Building, Growth and Infrastructure Renewal Reserve Funds already in place, staff are considering a new reserve fund for 100RE. This estimated \$500,000 is a mix of both tax and non-tax supported funding and the division of this funding requires further analysis. The allocation of these funds to capital projects will occur through the capital budget process and will be identified through an annual energy review and appropriate business case justification. This capital funding allocation will also be considered through the 2020 operating tax and non-tax budgets.

Consultations

Members of staff that were consulted and provided information, review and insight include:

- Tara Baker – General Manager, Finance;
- Greg Clark – Manager Financial Strategy Long Term Planning, Finance;
- Brent Andreychuk – Corporate Analyst, Finance;
- Chris Hill – Program Manager Fleet Planning, Operations;
- Joe Amaral – Manager Fleet Services, Operations;
- Jean Starchuk – Project Manager Facilities, Facilities Management;
- Tim Robertson – Division Manager, Wastewater Services;

Corporate Administrative Plan

Overarching Goals

Service Excellence

Financial Stability

Innovation

Service Area Operational Work Plans

Our Services - Municipal services that make lives better

Our People - Building a great community together

Our Resources - A solid foundation for a growing city

Attachments

None

Departmental Approval

Not applicable

Report Author

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Management

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Recommended By

Scott Stewart, C.E.T.
Deputy Chief Administrative Officer
Infrastructure, Development and
Enterprise

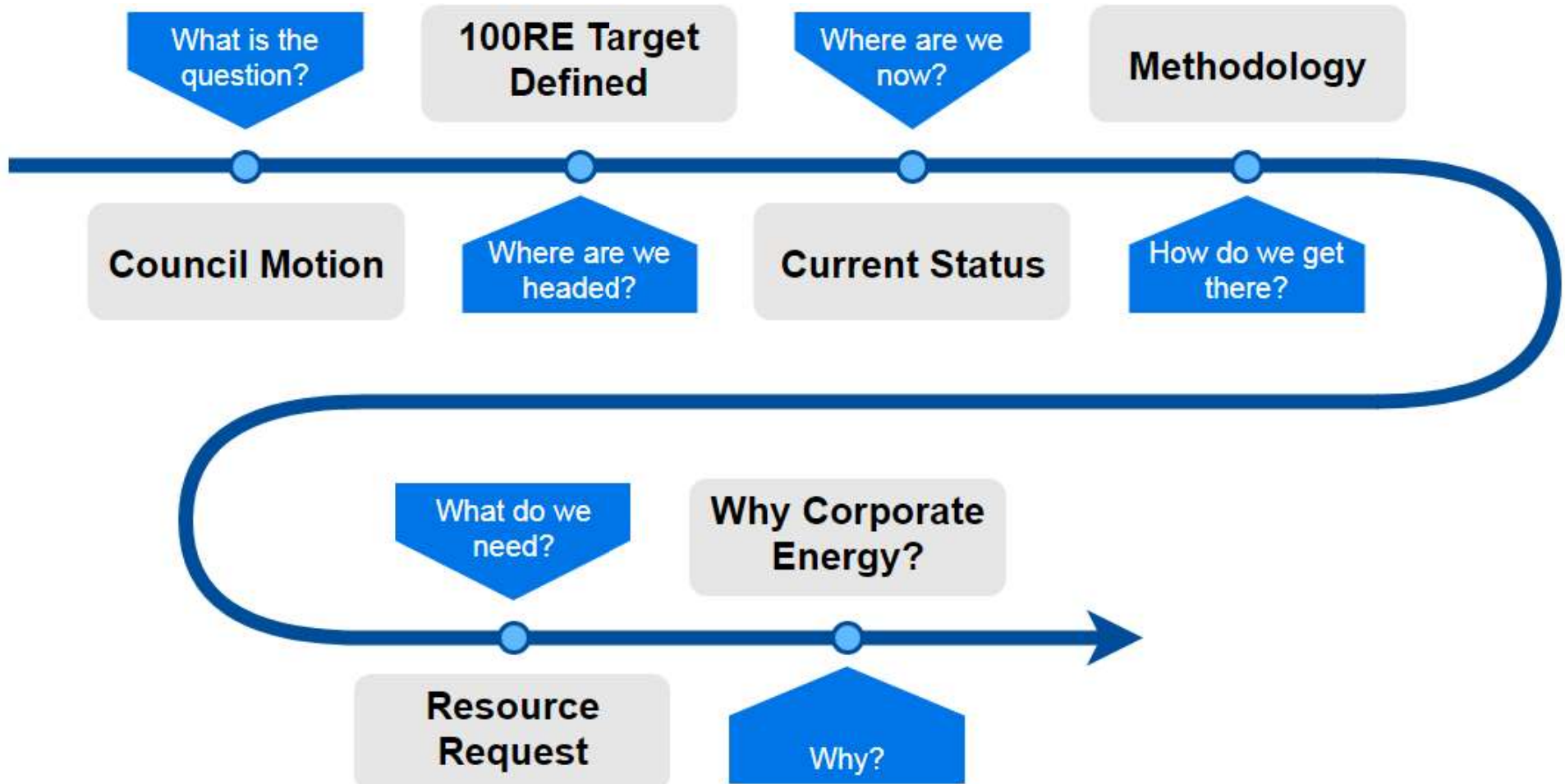
519-822-1260 x3445

scott.stewart@guelph.ca

- Organizational Focus
- Strategic
- Real Action
- Continuous Improvement

Bryan Ho-Yan, M.A.Sc., P.Eng., CEM
Program Manager, Corporate Energy

Agenda



Council Motion

1. That the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Corporate 100% Renewable Energy Target Defined

"Could the city of Guelph run solely on renewable energy?"... CBC

"Guelph councillors vote to strive for 100% renewable energy by 2050"... Guelph Mercury Tribune

"City of Guelph committee OKs plan to become 100% renewable by 2050"... CBC

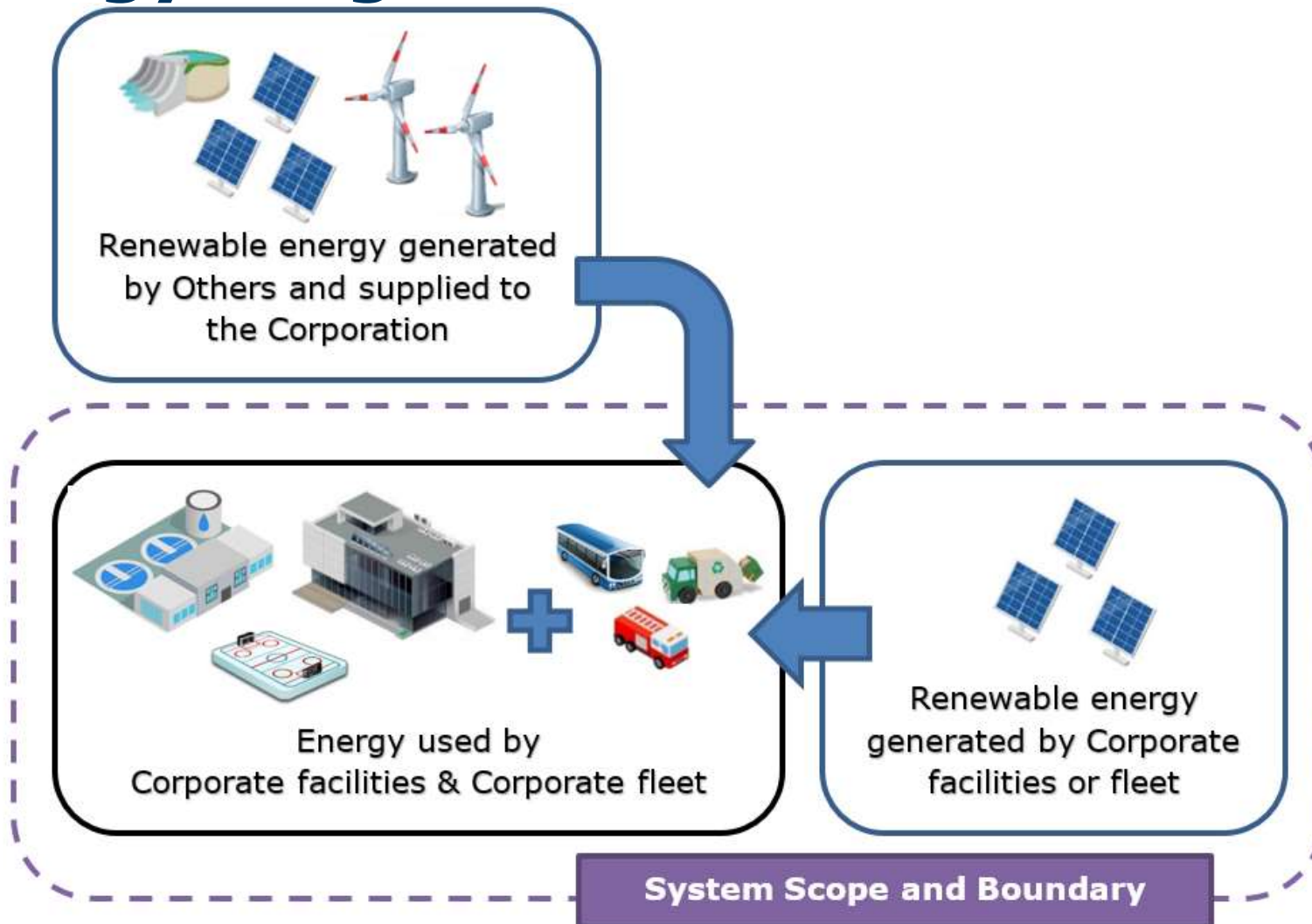
"Guelph forges ahead on renewable energy goals despite changes provincially"... Guelph Today

Corporate 100% Renewable Energy Target Defined

100RE Target:

"The Corporation will strive to achieve one hundred percent of its energy needs through renewable sources by 2050"

Corporate 100% Renewable Energy Target Defined

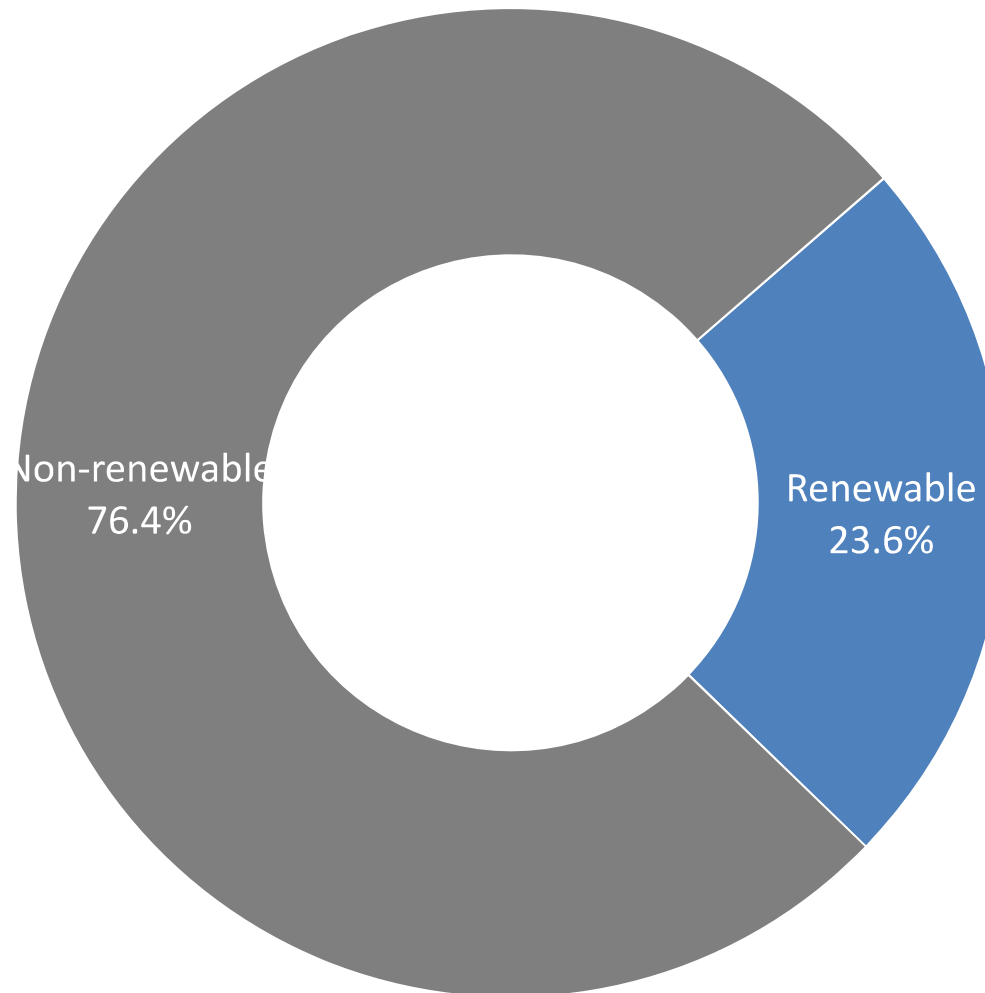


Corporate 100% Renewable Energy Target Defined

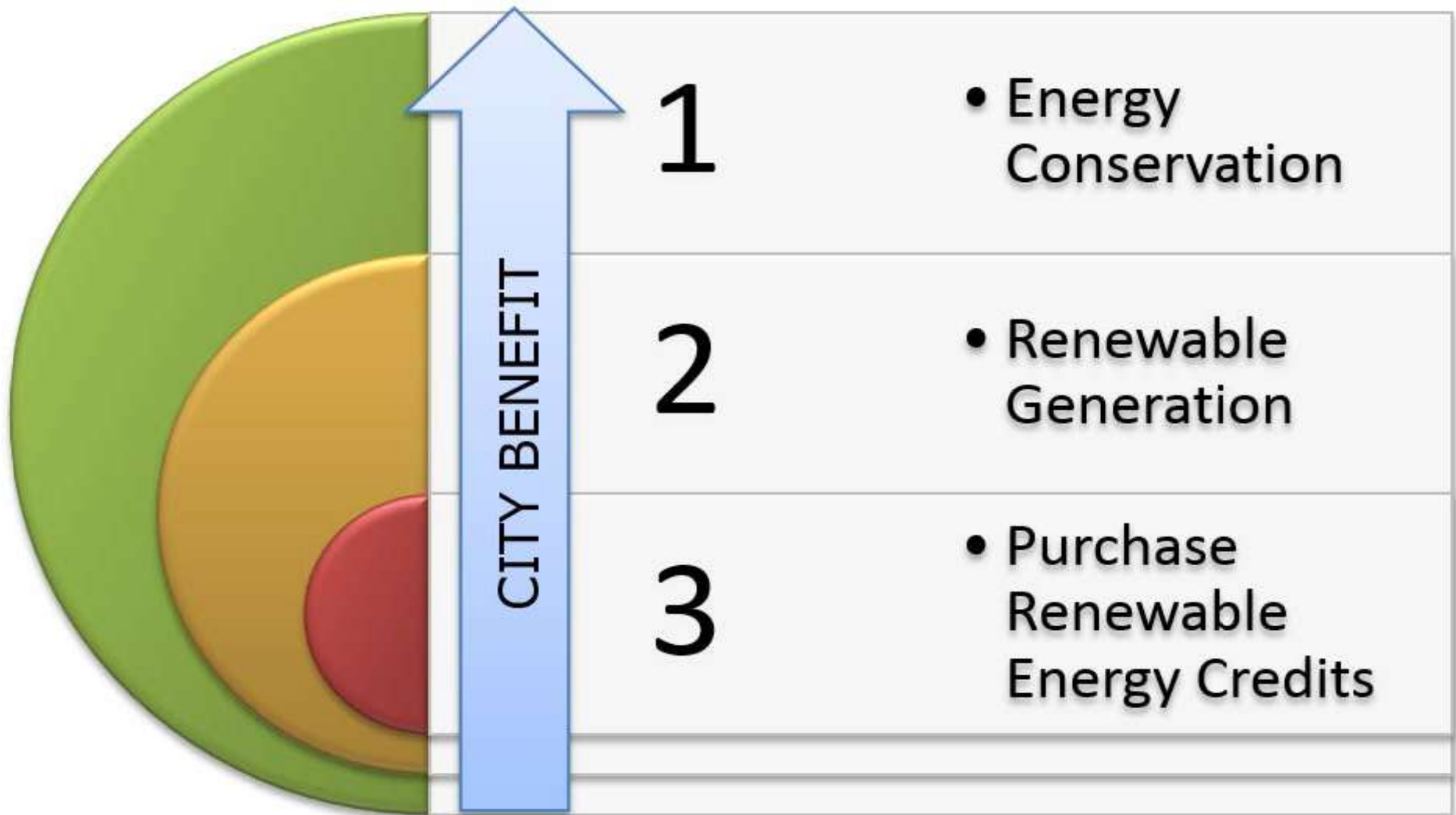
$$\frac{\text{Total renewable energy supplied to or generated by the Corporation}}{\text{Total energy consumed by the Corporation}} = \text{Corporate energy percentage renewable}$$

How Are We Doing?

100RE Target Performance Tracking

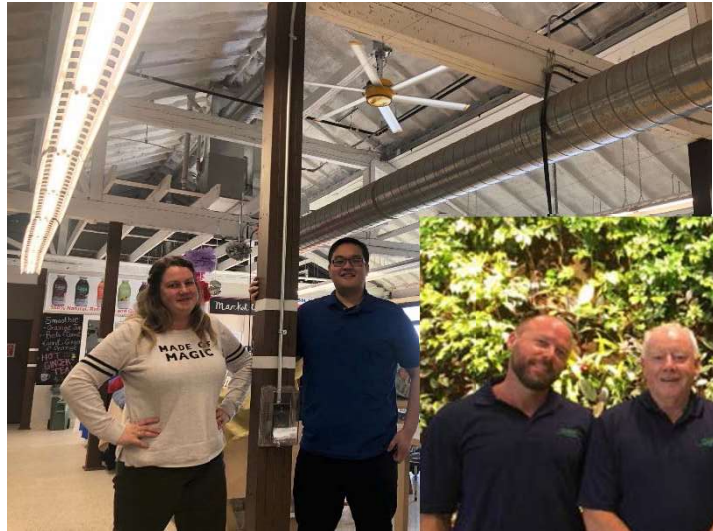


How Do We Get There?



How Do We Get There?

- Establish Corporate Energy Management System
 - Top management support
 - Communicated at all levels
 - Continuous improvement

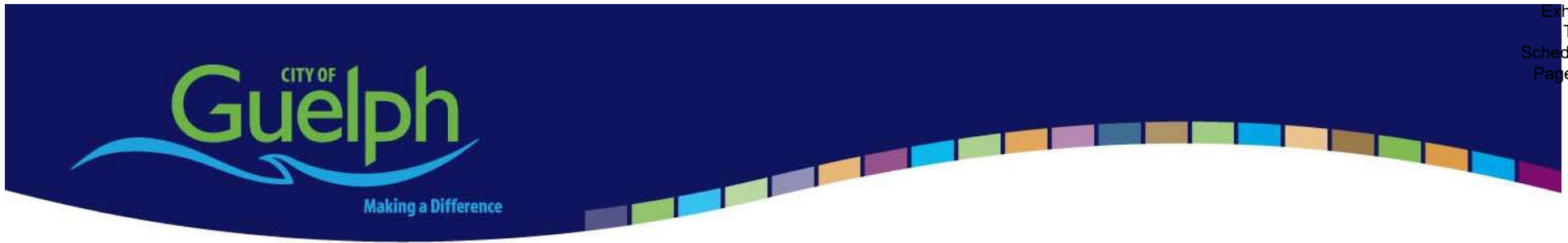


Corporate Energy Resource Needs

- Dedicated 100RE Reserve Fund
- Capital Budget Planning
 - FY2020: \$500,000
 - FY2021: \geq \$500,000
 - FY2022: \geq \$500,000
- Operating Resource Needs
 - New full-time permanent Corporate Energy Project Manager

Why Corporate Energy?

- Defined boundaries with direct control
- Real action and real results
- The Corporation is a key member of the Community
- History of success that can be built on
- Fiscally responsible
- Environmental stewardship
- Investment in our assets



Thank you

- Organizational Focus
 - Strategic
 - Real Action
- Continuous Improvement

This is Exhibit "1", Tab "3", Schedule "8" referred to in the
Affidavit of Tijo Joseph sworn by Tijo Joseph of the City of
Guelph, in the Regional Municipality of Wellington, before me at
the City of Toronto, in the Province of Ontario, on June 27, 2025
in accordance with O. Reg. 431/20, Administering Oath or
Declaration Remotely.



Commissioner for Taking Affidavits (or as may be)

KAELEIGH ("KIP") PHILLIPS

TAB 3

Schedule 8



**Minutes of Guelph City Council
Held in the Council Chambers, Guelph City Hall on
May 27 and 28, 2019 at 6:36 p.m.**

Attendance

Council:	Mayor C. Guthrie	Councillor R. Goller
	Councillor P. Allt	Councillor J. Hofland
	Councillor B. Bell	Councillor M. MacKinnon
	Councillor C. Billings	Councillor D. O'Rourke
	Councillor C. Downer	Councillor L. Piper
	Councillor D. Gibson	Councillor M. Salisbury
	Councillor J. Gordon	
Staff:	Mr. T. Lee, Acting CAO/Deputy CAO, Corporate Services	
	Mr. S. Stewart, Acting CAO/Deputy CAO, Infrastructure, Development and Enterprise Services	
	Ms. H. Flaherty, General Manager, Parks and Recreation	
	Ms. T. Baker, General Manager, Finance/City Treasurer	
	Mr. T. Salter, General Manager, Planning and Building Services	
	Mr. A. Vilko, General Manager, Environmental Services	
	Ms. M. Aldunate, Manager, Policy Planning and Urban Design	
	Mr. A. Chapman, Manager, Climate Change Office	
	Mr. A. van Eck, Program Manager, Inspection Services	
	Mr. S. O'Brien, General Manager, City Clerk's Office/City Clerk	
	Ms. L. Cline, Council and Committee Coordinator	

Call to Order (6:36 p.m.)

Mayor Guthrie called the meeting to order.

Disclosure of Pecuniary Interest and General Nature Thereof

There were no disclosures.

Confirmation of Minutes

1. Moved by Councillor Downer
Seconded by Councillor Piper

That the minutes of the open Council Meetings held April 8 and 23, 2019, and the Committee of the Whole Meeting held May 6, 2019, be confirmed as recorded and without being read.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Special Resolution

2. Moved by Councillor Gordon
Seconded by Councillor Piper

That the following resolution that was adopted by Council on May 28, 2018, be reconsidered:

1. That the Corporation of the City of Guelph will strive to achieve one hundred percent of its energy needs through renewable sources by 2050.
2. That Staff be directed to report back to the next term of Council on the most effective way for the Corporation to work towards achieving this goal, including information on, but not limited to, the impact on capital budget planning, potential resource needs, and a recommended process for the review of new program and policy development initiatives.

Voting in Favour: Councillors Allt, Bell, Goller, Gordon, Piper and Salisbury (6)

Voting Against: Mayor Guthrie, Councillors Billings, Downer, Gibson, Hofland, MacKinnon and O'Rourke (7)

Defeated

Committee of the Whole Consent Reports

The following items were extracted:

IDE-2019-45 New Outdoor Swimming Pool and Hot Tub By-Law
CS-2019-11 2018 Year-end Operating Variance Report and Surplus
Allocation

Balance of Committee of the Whole Consent Items

3. Moved by Councillor Hofland
Seconded by Councillor Gibson

That the balance of the May 27, 2019 Committee of the Whole Consent Report as identified below, be adopted:

IDE-2019-21 Sign By-Law Variances - 950 Paisley Road

1. That the request for variances from Table 1, Row 1 of Sign By-law Number (1996)-15245, as amended, to permit three (3) interchangeable building signs, each with an area of 1.99m², to be located 1m from the ground at 950 Paisley Road, be approved.

2. That the request for variances from Table 2, Row 12 of Sign By-law Number (1996)-15245, as amended, to permit 2 menu boards; one with a height of 3.64m above the adjacent roadway and a distance of 3m from the nearest road allowance; and one with a height of 3.96m above the adjacent roadway, a sign face area of 3.6m² and a distance of 3.5m from the nearest road allowance at 950 Paisley Road, be approved.

IDE-2019-48 Sign By-law Variances - 630 Scottsdale Drive

That the request for variances from Sign By-law Number (1996)-15245, as amended, to permit an illuminated building sign with an area of 3.07m² to be a height of .61m above the ground surface at 630 Scottsdale Drive, be approved.

**IDE-2019-43 2018 Building Permit Revenue and Expenditures,
Building Services OBC Stabilization Reserve Fund and
Annual Setting of Building Permit Fees**

1. That Council approve the recommended building permit fees, included as Attachment 2, report IDE-2019-43 titled "2018 Building Permit Revenue and Expenditures, Building Services OBC Stabilization Reserve Fund and Annual Setting of Building Permit Fees" dated May 6, 2019, effective June 1, 2019.
2. That Council approve adjusting the Building Services OBC Stabilization Reserve Fund target to be within the range of 100 to 150 per cent of prior year budget operating expenditures and that Appendix A of the General Reserve and Reserve Fund Policy be updated accordingly.
3. That Council approve the recommended automatic fee indexing methodology for 2020 and subsequent years, as described in report IDE-2019-43.

CS-2019-12 2018 Year-end Capital Variance Report

That report CS-2019-12, 2018 Year-end Capital Variance Report, dated May 6, 2019, be received.

CS-2019-13 2018 General Reserve and Reserve Fund Report

That the City's General Reserve and Reserve Fund Policy be amended to reflect the addition of the Ontario Municipal Commuter Cycling Reserve Fund (350) as at December 31, 2018.

CS-2019-56 Dividend Allocation Policy

1. That the one-time special dividend to be declared by Guelph Municipal Holdings Inc. (GMHI) be allocated as follows:
 - a. 45 per cent, to a maximum of \$6 million, be directed to the City Building Reserve Fund; and
 - b. 10 per cent, to a maximum of \$1.3 million, be directed to the Community Investment Program; and
 - c. \$700 thousand be directed to support the Community Energy Initiative; and

- d. The remaining funds be directed to the Infrastructure Renewal Reserve Fund.
2. That any net new ongoing dividend revenues from the City's municipal services corporations be directed to the City's Infrastructure Renewal Reserve Fund and be approved until such time that sustainable tax supported capital funding levels are achieved.
3. That a strategy, to redirect the base operating dividend revenue (\$1.9 million in 2019) from the City's municipal services corporations into the Infrastructure Renewal Reserve Fund, be approved.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Items for Discussion

CS-2019-11 2018 Year-end Operating Variance Report and Surplus Allocation

4. Moved by Hofland
Seconded by Allt

1. That the tax supported surplus of \$3,255,971 be allocated to the reserves and reserve funds as follows:

Tax Rate Operating Contingency Reserve (180)	\$816,000
Environment and Utility Contingency Reserve (198)	\$400,000
Police Operating Contingency Reserve (115)	\$39,000
Infrastructure Renewal Reserve Fund (150)	\$2,000,971
Total	\$3,255,971

2. That the Water Services surplus of \$578,081 be allocated to the Water Capital Reserve Fund (152).
3. That the Wastewater Services surplus of \$2,787,381 be allocated to the Wastewater Capital Reserve Fund (153).
4. That the Stormwater Services surplus of \$313,835 be allocated to the Stormwater Capital Reserve Fund (165).
5. That the Ontario Building Code (OBC) deficit of \$608,582 be funded from the Building Services OBC Stabilization Reserve Fund (188).
6. That the Court Services surplus of \$88,950 be allocated to the Court Contingency Reserve (211).

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

IDE-2019-45

New Outdoor Swimming Pool and Hot Tub By-Law

5. Moved by Councillor O'Rourke
Seconded by Councillor MacKinnon

That Council approve the recommended Outdoor Swimming Pool and Hot Tub By-law included as Attachment-1 to Report Number IDE-2019-45 titled "New Outdoor Swimming Pool and Hot Tub By-law".

Amendment

6. Moved by Councillor O'Rourke
Seconded by Councillor Allt

That Council approve the recommended Outdoor Swimming Pool and Hot Tub By-law included as Attachment-1 to Report Number IDE-2019-45 titled "New Outdoor Swimming Pool and Hot Tub By-law" **with the exception of the requirement for an audible alarm, which should be removed from the bylaw along with all references thereto.**

Voting in Favour: Councillors Allt, Gibson, O'Rourke and Piper (4)

Voting Against: Mayor Guthrie, Councillors Bell, Billings, Downer, Goller, Gordon, Hofland, MacKinnon and Salisbury (9)

Defeated

Main Motion

7. Moved by Councillor O'Rourke
Seconded by Councillor MacKinnon

That Council approve the recommended Outdoor Swimming Pool and Hot Tub By-law included as Attachment-1 to Report Number IDE-2019-45 titled "New Outdoor Swimming Pool and Hot Tub By-law".

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, Piper and Salisbury (12)

Voting Against: Councillor O'Rourke (1)

Carried

Motion to Oppose Bill 108, More Homes, More Choice Act, 2019

8. Moved by Councillor Allt
Seconded by Councillor Downer

WHEREAS the legislation that abolished the OMB and replaced it with LPAT received unanimous – all party support; and

WHEREAS All parties recognized that local governments should have the authority to uphold their provincially approved Official Plans; to uphold their community driven planning; and

WHEREAS Bill 108 will once again allow an unelected, unaccountable body make decisions on how our communities evolve and grow; and

WHEREAS On August 21, 2018 Minister Clark once again signed the MOU with the Association of Municipalities of Ontario and entered into "...a legally binding agreement recognizing Ontario Municipalities as a mature, accountable order of government."; and

WHEREAS This MOU is "enshrined in law as part of the Municipal Act" and recognizes that as "...public policy issues are complex and thus require coordinated responses...the Province endorses the principle of regular consultation between Ontario and municipalities in relation to matters of mutual interest"; and

WHEREAS By signing this agreement, the Province made "...a commitment to cooperating with its municipal governments in considering new legislation or regulations that will have a municipal impact"; and

WHEREAS Bill 108 will impact 15 different Acts - Cannabis Control Act, 2017, Conservation Authorities Act, Development Charges Act, Education Act, Endangered Species Act, 2007, Environmental Assessment Act, Environmental Protection Act, Labour Relations Act, 1995, Local Planning Appeal Tribunal Act, 2017, Municipal Act, 2001, Occupational Health and Safety Act, Ontario Heritage Act, Ontario Water Resources Act, Planning Act, Workplace Safety and Insurance Act, 1997.

Now Therefore Be it Hereby Resolved That the City of Guelph oppose Bill 108 which in its current state will have negative consequences on community building and proper planning; and

Be it further resolved that the City of Guelph call upon the Government of Ontario to halt the legislative advancement of Bill 108 to enable fulsome consultation with Municipalities to ensure that its objectives for sound decision making for housing growth that meets local needs will be reasonably achieved; and

Be It Further Resolved That a copy of this Motion be sent to the Honourable Doug Ford, Premier of Ontario, The Honourable Christine Elliott, Deputy Premier, the Honourable Steve Clark, Minister of Municipal Affairs, the Honourable Andrea Horwath, Leader of the New Democratic Party, and all MPPs in the Province of Ontario; and

Be It Further Resolved That a copy of this Motion be sent to the Association of Municipalities of Ontario (AMO) and all Ontario municipalities for their consideration.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

IDE-2019-52

Solid Waste Management Master Plan Advisory Committee

The following delegate spoke regarding this item:
Joe Hruska, Canadian Plastics Industry Association

9. Moved by Councillor Billings
Seconded by Councillor Gibson
 1. That the terms of reference for the Solid Waste Management Master Plan Public Advisory Committee included as Attachment 1 to IDE-2019-52, dated May 6, 2019, be approved.
 2. That staff partner with the University of Guelph IdeasCongress (ICON) Program to explore viable solutions to reduce single use plastics across Guelph, and report back to Council with updates or further recommendations as part of Solid Waste Management Master Plan update.
 3. That the following be referred to and considered as part of the Solid Waste Master Plan process and scope of activity:
 - a) That staff investigate any required changes to the current agreements between the City and/or vendors/leaseholders resulting from the sale of single use plastics.
 - b) That staff facilitate further engagement internally on reducing or eliminating single use plastics through the Solid Waste Management Master Plan process.
 - c) That staff explore the issue of single-use plastics and packaging as an opportunity to leverage the Civic Accelerator, to help realize further options to reduce waste in the City of Guelph.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

IDE-2019-60

Funding Requests from the Affordable Housing Reserve to Support Applications to the National Housing Co-Investment Fund

Melissa Aldunate, Manager, Policy Planning and Urban Design, presented two requests for funding to the affordable housing reserve.

The following delegates spoke regarding this item:
David Wormald, St. Joseph's Health Centre Guelph
Pete Waters, Rockwater on Janefield

It was requested that clauses one through four be voted on separately from clauses five through eight.

10. Moved by Councillor Gibson
Seconded by Councillor Bell

1. That a financial incentive in the amount of \$924,000 be provided to Rockwater on Janefield Inc. for an affordable housing project as generally describe in IDE Report 2019-60 subject to CMHC approval of their application to the National Housing Co-Investment Fund and entering into an agreement with the City.
2. That staff be directed to prepare a Municipal Capital Facilities By-law to authorize the financial incentives for Rockwater on Janefield Inc.
3. That staff be directed to enter into an agreement with Rockwater on Janefield Inc., to implement the municipal incentives, to the satisfaction of the DCAO of Public Services, the City Solicitor and the Chief Financial Officer.
4. That the Mayor be authorized to provide a letter of support for the Rockwater on Janefield Inc. proposal to satisfy the National Housing Co-Investment Fund application requirements.

Voting in Favour: Mayor Guthrie, Councillors Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (12)

Voting Against: Councillor Allt (1)

Carried

11. Moved by Councillor Gibson
Seconded by Councillor Bell

5. That a financial incentive in the amount of \$364,000 be provided to St. Joseph's Housing Corporation for an affordable housing project as generally described in IDE Report 2019-60 subject to CMHC approval of their application to the National Housing Co-Investment Fund and entering into an agreement with the City.
6. That staff be directed to enter into an agreement with St. Joseph's Housing Corporation, to implement the municipal incentives, to the satisfaction of the DCAO of Public Services, the City Solicitor and the Chief Financial Officer.
7. That the Mayor be authorize to provide a letter of support for the St. Joseph's Housing Corporation proposal to satisfy the National Housing Co-Investment Fund application requirements.
8. That the Mayor and Clerk be authorized to execute the Municipal Incentives Agreements.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

IDE-2019-47 Community Energy Initiative Update: Pathway to Net Zero Carbon

The following delegate spoke regarding this item:
Susan Watson

12. Moved by Councillor Piper
Seconded by Councillor Gibson

That staff pursue a service agreement with Our Energy Guelph (OEG) to act as the City's Community Energy Initiative (CEI) delivery partner.

First Amendment

13. Moved by Councillor Piper
Seconded by Councillor Allt

2. That the service agreement between OEG and the City of Guelph come back to Council for approval.
3. That the Service Agreement include the following conditions:
Prior to execution of the agreement:
- a) That the OEG board be established;
 - b) That letters of incorporation be approved and in effect;
 - c) That a one-year budget breakdown be established; and
 - d) That funding for years 2 through 5 be approved after a one-year follow up report demonstrating that the year one goals have been achieved.

Amendment to the First Amendment

14. Moved by Councillor Gibson
Seconded by Councillor Bell

3. That the Service Agreement include the following conditions:
Prior to execution of the agreement:
- a) That the OEG board be established;
 - b) That letters of incorporation be approved and in effect;
 - c) That a one-year budget breakdown be established; and
 - d) That funding for years **3 through 5** be approved after a **two-year** follow up report demonstrating that the **year two** goals have been achieved.

Voting in Favour: Mayor Guthrie, Councillors Bell, Billings, Downer, Gibson, Goller, MacKinnon, O'Rourke, Piper and Salisbury (10)

Voting Against: Councillors Allt, Gordon and Hofland (3)

Carried

First Amendment as Amended

15. Moved by Councillor Piper
Seconded by Councillor Allt

2. That the service agreement between OEG and the City of Guelph come back to Council for approval.
3. That the Service Agreement include the following conditions:
Prior to execution of the agreement:
 - a) That the OEG board be established;
 - b) That letters of incorporation be approved and in effect;
 - c) That a one-year budget breakdown be established; and
 - d) That funding for years **3 through 5** be approved after a **two-year** follow up report demonstrating that the **year two** goals have been achieved.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Second Amendment

16. Moved by Councillor Downer
Seconded by Councillor O'Rourke

4. Consistent with the level of urgency around climate change mitigations expressed by the International Panel on Climate Change (IPCC), that staff be directed to include in the service agreement with Our Energy Guelph an obligation to report against the "45% reduction by 2030" timeline that the IPCC recommends, in addition to the net zero by 2050.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Main Motion as Amended

17. Moved by Councillor Piper
Seconded by Councillor Gibson

1. That staff pursue a service agreement with Our Energy Guelph (OEG) to act as the City's Community Energy Initiative (CEI) delivery partner.
2. That the service agreement between OEG and the City of Guelph come back to Council for approval.
3. That the Service Agreement include the following conditions:
Prior to execution of the agreement:
 - e) That the OEG board be established;
 - f) That letters of incorporation be approved and in effect;
 - g) That a one-year budget breakdown be established; and
 - h) That funding for years 3 through 5 be approved after a two-year follow up report demonstrating that the year two goals have been achieved.

4. Consistent with the level of urgency around climate change mitigations expressed by the International Panel on Climate Change (IPCC), that staff be directed to include in the service agreement with Our Energy Guelph an obligation to report against the "45% reduction by 2030" timeline that the IPCC recommends, in addition to the net zero by 2050.

Voting in Favour: Mayor Guthrie, Councillors Alt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

New Motion

18. Moved by Councillor O'Rourke
Seconded by Councillor Gordon

That Council direct staff to review the municipal tools for catalyzing net-zero energy development identified in the Federation of Canadian Municipalities/GMF Feasibility study, consult with community partners as needed, and return to Council with implementation options and recommendations.

Voting in Favour: Mayor Guthrie, Councillors Alt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Council recessed at 9:01 p.m. and reconvened at 9:10 p.m.

IDE-2019-44

Corporate 100% Renewable Energy Target by 2050

The following delegates spoke regarding this item:

Mark Berardine

Morgan Hannah

Sian Matwey

John Lawson

Bill McLellan

Susan Watson

Paul Costello, Council of Canadians

Pamela Richardson

Matt Saunders

Steve Dyck

Horeen Hassan, Central Students Association, University of Guelph

Doug Prest

Susan Carey

Shauna McCabe

Charles Castillo

Michael Dube

Evan Ferrari, eMERGE Guelph

The following delegates were not present:

Joe Brook

Donna Jennison
Michele Vernet
Norah Chaloner
Diane Hurst
Jax Thornton

Extension of Meeting per Procedural By-law

19. Moved by Councillor Piper
Seconded by Councillor Goller

That Section 4.13 (a) and (b) of the Procedural By-law be invoked to allow Council to continue to 11:59 p.m.

Voting in Favour: Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (12)

Voting Against: Mayor Guthrie (1)

Carried

IDE-2019-44 Corporate 100% Renewable Energy Target by 2050

20. Moved by Councillor Piper
Seconded by Councillor Gordon

1. That the Corporate 100% Renewable Energy Target (100RE Target) definition be received, adopted and reviewed every 5 years.
2. That staff be directed to develop a capital reserve fund strategy to support the Corporate energy optimization projects through the 2020 capital budget process.
3. That the capital and operating costs to enable progress towards the 100RE Target be referred to the 2020 budget process.
4. That staff provide a Corporate Energy Progress Report on an annual basis.
5. That staff through their annual reporting to Council, provide Council with further opportunities and initiatives to realize the 2050, 100% renewable energy target sooner.

First Amendment

21. Moved by Councillor Piper
Seconded by Councillor Gordon

- 1. That the City of Guelph acknowledges the impacts of climate change and joins citizens, cities and countries around the world in declaring a climate emergency.**
- 2. That in response, commits to the collaborative implementation of the Community Energy Initiative net zero and corporate renewable energy goals.**

3. **That the Community Energy Initiative/Our Energy Guelph Pathway and 100RE to Net Zero Action Plan be sent to our respective Provincial and Federal Ministers of the Environment as an example of community collaboration to combat the climate crisis.**
4. **That all future reports to council contain a section titled Climate Change Implications that will identify how the recommendations will contribute toward meeting the objectives of the CEI and/or Corporate Energy Plan.**
5. That the Corporate 100% Renewable Energy Target (100RE Target) definition be received, adopted and reviewed every 5 years.
6. That staff be directed to develop a capital reserve fund strategy to support the Corporate energy optimization projects through the 2020 capital budget process.
7. That the capital and operating costs to enable progress towards the 100RE Target be referred to the 2020 budget process.
8. That staff provide a Corporate Energy Progress Report on an annual basis.
9. That staff through their annual reporting to Council, provide Council with further opportunities and initiatives to realize the 2050, 100% renewable energy target sooner.

Suspending the Procedural By-law

23. Moved by Councillor Hofland
Seconded by Councillor Goller

That Section 4.8 (b) of the Procedural By-law be suspended to allow three additional delegates to speak without registering.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

The following delegates spoke regarding this item:

Sequoia Kim
Indigo Kim
Thea Armstrong

Amendment to the First Amendment

22. Moved by Councillor Gibson
Seconded by Councillor Goller

That the City of Guelph acknowledges the impacts of climate change and joins citizens, cities and countries around the world in **acknowledging** a climate **crisis**. It was requested that the wording be voted on separately.

24. Moved by Councillor Gibson
Seconded by Councillor Goller

1. That the City of Guelph acknowledges the impacts of climate change and joins citizens, cities and countries around the world in **acknowledging** a climate emergency.

Voting in Favour: Mayor Guthrie, Councillors Bell, Billings, Gibson, Goller, MacKinnon and O'Rourke (7)

Voting Against: Councillors Allt, Downer, Gordon, Hofland, Piper and Salisbury (6)
Carried

25. Moved by Councillor Gibson
Seconded by Councillor Goller

1. That the City of Guelph acknowledges the impacts of climate change and joins citizens, cities and countries around the world in acknowledging a climate **crisis**.

Voting in Favour: Mayor Guthrie, Councillors Bell, Billings, Gibson, Goller, MacKinnon and O'Rourke (7)

Voting Against: Councillors Allt, Downer, Gordon, Hofland, Piper and Salisbury (6)
Carried

Suspending the Procedural By-law

26. Moved by Councillor Piper
Seconded by Councillor Gibson

That Section 4.13 of the Procedural By-law be suspended to allow Council to continue beyond 12:00 a.m.

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Second Amendment

27. Moved by Councillor Downer
Seconded by Councillor MacKinnon

4. That all future reports to council contain a section titled Climate Change Implications that will identify how the recommendations will contribute toward meeting the objectives of the CEI and/or Corporate Energy Plan **and that staff report back with a policy and procedure for reporting.**

Voting in Favour: Mayor Guthrie, Councillors Allt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Main Motion as Amended

It was requested that clause one be voted on separately.

29. Moved by Councillor Piper
Seconded by Councillor Gordon

1. That the City of Guelph acknowledges the impacts of climate change and joins citizens, cities and countries around the world in acknowledging a climate crisis.

Voting in Favour: Mayor Guthrie, Councillors Bell, Billings, Downer, Gibson, Goller, Hofland, MacKinnon and O'Rourke (9)

Voting Against: Councillors Allt, Gordon, Piper and Salisbury (4)

Carried

30. Moved by Councillor Piper
Seconded by Councillor Gordon

2. That in response, commits to the collaborative implementation of the Community Energy Initiative net zero and corporate renewable energy goals.
3. That the Community Energy Initiative/Our Energy Guelph Pathway and 100RE to Net Zero Action Plan be sent to our respective Provincial and Federal Ministers of the Environment as an example of community collaboration to combat the climate crisis.
4. That all future reports to council contain a section titled Climate Change Implications that will identify how the recommendations will contribute toward meeting the objectives of the CEI and/or Corporate Energy Plan and that staff report back with a policy and procedure for reporting.
5. That the Corporate 100% Renewable Energy Target (100RE Target) definition be received, adopted and reviewed every 5 years.
6. That staff be directed to develop a capital reserve fund strategy to support the Corporate energy optimization projects through the 2020 capital budget process.
7. That the capital and operating costs to enable progress towards the 100RE Target be referred to the 2020 budget process.
8. That staff provide a Corporate Energy Progress Report on an annual basis.
9. That staff through their annual reporting to Council, provide Council with further opportunities and initiatives to realize the 2050, 100% renewable energy target sooner.

Voting in Favour: Mayor Guthrie, Councillors Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (12)

Voting Against: Councillor Allt (1)

Carried

New Motion

28. Moved by Councillor Hofland
Seconded by Councillor O'Rourke

That a Project Manager, Renewable Energy be approved effective July 1, 2019 for a total 2020 base budget impact of \$126,000 and a one-time 2019 impact totaling \$67,500 to be funded from the Tax Rate Operating Contingency Reserve.

Voting in Favour: Mayor Guthrie, Councillors Alt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

By-laws

31. Moved by Councillor Gibson
Seconded by Councillor Goller

That By-laws numbered (2019)-20408 to (2019)-20410, inclusive, are hereby passed as amended.

Voting in Favour: Mayor Guthrie, Councillors Alt, Bell, Billings, Downer, Gibson, Goller, Gordon, Hofland, MacKinnon, O'Rourke, Piper and Salisbury (13)

Voting Against: (0)

Carried

Adjournment (12:18 a.m.)

32. Moved by Councillor Bell
Seconded by Councillor O'Rourke

That the meeting be adjourned.

Carried

Minutes to be confirmed on Monday, June 24, 2019.

Mayor Guthrie

Stephen O'Brien - City Clerk