

To: Development Services Committee

From: Warren Munro, HBA, RPP, Commissioner,
Development Services Department

Report Number: DS-20-130

Date of Report: November 4, 2020

Date of Meeting: November 9, 2020

Subject: Federation of Canadian Municipalities' Partner for Climate
Protection Program Milestone 3 Submission - Community Plan

File: B-8000-0094

1.0 Purpose

The purpose of this report is to obtain Council endorsement of the City of Oshawa Community Greenhouse Gas (G.H.G.) Reduction Plan dated November 2020 (the “November 2020 Plan”) as a guideline to reduce energy costs, energy consumption and greenhouse gas emissions and the authority to submit it to the Federation of Canadian Municipalities (F.C.M.) to satisfy the Milestone 3 requirement for the Partners for Climate Protection (P.C.P.) Program.

Attachment 1 is a copy of the November 2020 Plan.

2.0 Recommendation

That the Development Services Committee recommend to City Council:

1. That, pursuant to Report DS-20-130 dated November 4, 2020, City Council endorse the City’s Partners for Climate Protection Milestone 3 City of Oshawa Community Greenhouse Gas Reduction Plan dated November 2020 (Attachment 1 to said Report) as a guideline to reduce energy costs, energy consumption and greenhouse gas emissions, to the Federation of Canadian Municipalities for review and approval.
2. That, a copy of Report DS-20-130 dated November 4, 2020 and the related Council resolution be sent to the Association of Municipalities of Ontario, the Region of Durham, Durham area municipalities, Oshawa Power and Utilities Corporation, the Central Lake Ontario Conservation Authority, and the City’s Building Industry Liaison Team which includes representatives of the Durham Chapter of the Building Industry and Land Development Association and the Durham Region Home Builders’ Association.

3.0 Executive Summary

The City of Oshawa is a member of the Federation of Canadian Municipalities' Partners for Climate Protection Program. This Program is a voluntary, five-milestone framework to help municipalities reduce energy costs, energy consumption and greenhouse gas emissions, at a corporate and community level.

Members of the Partners for Climate Protection Program commit to developing corporate (city operations) and community (citywide) action plans to reduce greenhouse gas emissions. The City has achieved all five milestones for developing and implementing the Corporate Plan, and has achieved Milestone 1 (establishing a baseline inventory year for emissions) and Milestone 2 (setting emissions targets) of the Community Plan.

The City of Oshawa Community Greenhouse Gas Reduction Plan was developed through a collaborative process and identifies various Actions and Opportunities that will help to reduce greenhouse gas emissions in Oshawa, while achieving additional environmental, economic and social benefits.

4.0 Input From Other Sources

The following have been consulted in the preparation of this report:

- Commissioner, Community Services
- Commissioner, Corporate Services
- Oshawa Environmental Advisory Committee (O.E.A.C.)
- O.P.U.C.
- F.C.M.
- International Council for Local Environmental Initiatives (I.C.L.E.I.)
- Region of Durham
- Central Lake Ontario Conservation Authority (C.L.O.C.A.)
- Building Industry Liaison Team (B.I.L.T.) which includes representatives of the Durham Chapter of the Building Industry and Land Development Association (B.I.L.D.) and the Durham Region Home Builders Association (D.R.H.B.A.).

5.0 Analysis

5.1 Legislative Framework

5.1.1 Federal Greenhouse Gas Reduction Targets – the Paris Agreement

On December 12, 2015, the Government of Canada, along with 194 countries, signed the Paris Agreement, which aims to strengthen the global response to the threat of climate change by:

- Holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels;

- Increasing the ability to adapt to the adverse impacts of climate change, foster climate resilience and lower G.H.G. emissions in a manner that does not threaten food production; and,
- Making finance flows (e.g. investment, trade, spending, etc.) consistent with a pathway towards lower G.H.G. emissions and climate resilient development.

Additional information on the Paris Agreement can be found at the following link:
<https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

Under the Paris Agreement, Canada committed to reducing its G.H.G. emissions by 30% below 2005 levels by 2030. To reach this target, the projected emission reductions will come from the following strategies:

- New policies implemented since 2015 (e.g. the accelerated phase-out of coal-fired electricity);
- The implementation of policies in the Pan-Canadian Framework on Clean Growth and Climate Change (e.g. clean fuel standards, net zero building codes, etc.);
- Land sector contribution [e.g. types of land use and changes in land use and forestry activities that impact G.H.G. emissions, such as urban settlements, industrial/commercial/institutional (I.C.I.) uses and agriculture]; and,
- Additional policies and measures that are under development but have not yet been fully implemented, as well as emerging and future reductions (e.g. new technologies, future government-led measures, etc.).

Additional information on Canada's progress towards achieving its G.H.G. emission reduction targets can be found at the following link:
<https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/progress-towards-canada-greenhouse-gas-emissions-reduction-target.html>.

5.1.2 Provincial Greenhouse Gas Reduction Targets – the Made-in-Ontario Environment Plan

On November 29, 2018, the Province released the Made-in-Ontario Environment Plan ("Ontario's Environment Plan"), which aims to:

- Help protect our air, land and water;
- Address litter and reduce waste;
- Support Ontarians to continue doing their share to reduce G.H.G. emissions; and,
- Help communities and families prepare for climate change.

Through Ontario's Environment Plan, the Province committed to reducing its G.H.G. emissions by 30% below 2005 levels by 2030, which aligns with Canada's target under the Paris Agreement.

Additional Information on Ontario's Environment Plan can be found at the following link:
<https://www.ontario.ca/page/made-in-ontario-environment-plan>.

On January 27, 2020, Oshawa City Council adopted the recommendations contained in Report DS-20-08 dated January 8, 2020 and endorsed an interim greenhouse gas reduction target of 30% below the 2007 baseline levels by 2030. This target generally aligns with the Federal and Provincial Government's target.

5.1.2.1 Provincial Air Quality Monitoring

The Province, through the Ministry of Environment, Conservation and Parks, operates a network of 39 Air Quality Index (A.Q.I.) monitoring stations across Ontario, including one station in Durham Region, located at Durham College in Oshawa.

A.Q.I. monitoring stations generally measure the following six common pollutants, which can have adverse effects on human health and contribute to global warming at high levels:

- Ground level Ozone;
- Fine particulate matter;
- Nitrogen dioxide;
- Carbon monoxide;
- Sulphur dioxide; and,
- Total reduced sulphur compounds.

In 2014, City staff were directed to provide Council with relevant information on the results and trends analysis by the Province from the A.Q.I. station located at Durham College, as it becomes available.

On November 26, 2019, City Council received Information Report INFO-19-330 containing a summary of the Province's 2017 Air Quality Report.

5.1.3 Region of Durham Greenhouse Gas Reduction Targets

On June 2, 2010, Regional Council adopted the following G.H.G. emission reduction targets:

- 5% reduction from 2007 levels by 2015;
- 20% reduction from 2007 levels by 2020; and,
- 80% reduction from 2007 levels by 2050.

These targets are consistent with the G.H.G. emission reduction levels that the Intergovernmental Panel on Climate Change deems necessary to limit global warming to 2 degrees Celsius.

On April 24, 2019, Regional Council approved the Durham Community Energy Plan (D.C.E.P.), in principle. The D.C.E.P. is a long-term plan to achieve the above-mentioned targets by improving energy efficiency and reducing energy consumption in the Region.

Additional information on the D.C.E.P. can be found at the following link:
<https://www.durham.ca/en/living-here/durham-community-energy-plan.aspx>.

5.1.4 City of Oshawa Policies

5.1.4.1 2020-2023 Oshawa Strategic Plan

On November 5, 2019, City Council considered Report CNCL-19-65 dated October 30, 2019 concerning the recommended approach for the 2020-2023 Oshawa Strategic Plan (O.S.P.). The following motions were approved, in principle, for the purposes of obtaining public input on the O.S.P.:

“That the words ‘targets, and benchmarking aligned with federally and internationally recognized targets’ be added after the word ‘plans’ in Strategy 3 of the Theme of Proactive Environmental Management; and,

That the words ‘and combat climate change’ be added to the title of the Theme of ‘Proactive Environmental Management’.”

Consequently, Theme 1 under the “Environmental Responsibility” goal of the 2020-2023 O.S.P. is “Proactive Environmental Management and Combat Climate Change”. Furthermore, Strategy 3 under this Theme is to “develop and implement corporate and community plans, targets, and benchmarking aligned with federally and internationally recognized targets to reduce greenhouse gas emissions and energy use.”

The 2020-2023 O.S.P. was endorsed by Council on May 25, 2020 and serves as the City’s highest-level policy document. The O.S.P. includes a Strategic Goal of Environmental Responsibility, and seeks to protect, conserve and promote the environment.

5.1.4.2 Climate Emergency Declaration

On December 16, 2019, City Council considered FIN-19-107 and adopted the following recommendation:

- “1. That the City of Oshawa declare climate change as an emergency for the purpose of protecting wildlife, our natural environment and our economy; and,
2. That the City of Oshawa apply a climate lens to plans and actions of the City of Oshawa including strategic plans and future budgets; and,
3. That the City of Oshawa copy neighbouring Municipalities, Regional Council, Members of Provincial Parliament and Members of Parliament on Official correspondence of this declaration in an effort to seek assistance in resources and funding to help our community effectively combat climate change.”

5.1.4.3 Oshawa Official Plan

The Oshawa Official Plan (O.O.P.) sets out the land use policy directions for long-term growth and development in the City. The O.O.P. includes policies related to environmental management, conservation and long-term sustainability. Policy 5.1.11 of the O.O.P.

states, in part, that “The City supports incremental reduction of overall greenhouse gas emissions and other air pollutants generated by the municipality’s own corporate activities and functions.”

5.1.4.4 Integrated Transportation Master Plan and Active Transportation Master Plan

The City’s Integrated Transportation Master Plan (I.T.M.P.) is a planning document designed to define the policies, programs and infrastructure changes required to meet future transportation needs. The I.T.M.P. seeks to encourage sustainability and reduce G.H.G. emissions by providing residents with viable multi-modal transportation options that include alternatives to gas-powered automobiles.

The Active Transportation Master Plan (A.T.M.P.) is a statement of the City’s ongoing commitment to promote active lifestyle opportunities and choices for residents, visitors and employees in the City. The A.T.M.P. helps to reduce G.H.G. emissions by encouraging a multi-modal network that supports sustainable, healthy and complete communities.

5.2 Partners for Climate Protection Program

The P.C.P. Program is voluntary and was established by F.C.M. in 1994. It was created to help municipalities take action against climate change through the following five-milestone framework:

- Milestone 1: create a baseline emissions inventory and forecast;
- Milestone 2: set emissions reduction targets;
- Milestone 3: develop a local action plan;
- Milestone 4: implement the local action plan; and,
- Milestone 5: monitor progress and report results.

The P.C.P. Program also provides project funding through the Green Municipal Fund for the development of community and corporate plans.

5.2.1 Milestones 1 and 2

On March 9, 2009, City Council considered Report DS-09-74 dated February 25, 2009, and adopted a recommendation to participate in the P.C.P. Program and committed to achieving the milestones set out in the P.C.P. five-milestone framework.

On September 7, 2010, City Council considered Report DS-10-217 dated August 25, 2010, and adopted the following recommendation:

- “1. That Report DS-10-217 dated August 25, 2010 and its attached inventories be submitted to the Federation of Canadian Municipalities Partners for Climate Protection Program in partial satisfaction of Milestone 1 of the Program; and,
2. That Milestone 1 of the Program be finally completed by adopting 2007 as the City’s benchmark or baseline year for the purposes of monitoring and measuring the City’s future performance in achieving its Greenhouse Gas

reduction targets and that the Partners for Climate Protection Program be so advised; and

3. That the following community and corporate Greenhouse Gas emission targets be adopted as provisional targets until a local action plan is developed at which time the targets may be further refined:
 - 5% reduction by 2015 from 2007 baseline;
 - 20% reduction by 2020 from 2007 baseline;
 - 80% reduction by 2050 from 2007 baseline; and,
4. That the City apply to the Federation of Canadian Municipalities Green Municipal Fund for funding to complete Milestone 3 (preparation of a Local Action Plan/Integrated Community Sustainability Plan for reducing Greenhouse Gas Emissions) and that any additional City funding required be referred to the 2011 budget for consideration for funding from the Gas Tax.”

The G.H.G. emission reduction targets identified in the above Council resolution are consistent with the Region of Durham’s G.H.G. emission reduction targets identified in the D.C.E.P.

On January 28, 2013, City Council considered Report DS-13-10 dated January 9, 2013, concerning the Environmental Commissioner of Ontario’s Annual G.H.G. Progress Report 2012, and adopted the following recommendation:

“That Report DS-13-10 dated January 9, 2013, regarding the Environmental Commissioner of Ontario’s Annual Greenhouse Gas Progress Report 2012 – A Question of Commitment, be received for information and that staff proceed with Milestone 3 of the Federation of Canadian Municipalities Partners for Climate Protection plan, which requires the development and implementation of corporate and community greenhouse gas emission reduction plans to achieve the Milestone 2 targets previously established and approved by Council.”

5.2.2 Milestone 3

Milestone 3 of the P.C.P. Program requires members to establish corporate and community action plans to reduce energy costs, energy consumption and G.H.G. emissions, including the following information:

- A description of the activities that will help achieve the reductions set out in Milestone 2;
- A description of the public or internal stakeholders who participated in developing the plans;
- A description of costs associated with the implementation of the plans and funding sources; and,

- The municipal departments and/or the organizations responsible for the actions outlined in the plans.

The November 2020 Plan, which forms the City's Milestone 3 submission of the P.C.P. Program, is further described in Section 5.3 of this Report.

5.2.3 Corporate Greenhouse Gas Reduction

On February 22, 2016, City Council considered Report DS-16-25 dated February 3, 2016 concerning the P.C.P. Program Milestone 3 Corporate Plan Submission, and adopted the following recommendation:

“That, pursuant to Report DS-16-25 dated February 3, 2016, City Council endorse the City's Partners for Climate Protection Milestone 3 Corporate Plan as a guideline to reduce energy costs, energy consumption and greenhouse gas emissions and that staff be authorized to submit it to the Federation of Canadian Municipalities for review and approval.”

As a result of completing the Milestone 3 submission of the Corporate Plan, the City received acknowledgement from F.C.M. on March 8, 2016 that it had achieved Milestones 3, 4, and 5 for the Corporate Plan. It should be noted that this acknowledgement of achievement does not relate to the community action plan (i.e. the November 2020 Plan).

To date, the City has, and continues to, complete many of the actions identified in the Corporate Plan to help reduce the G.H.G. emissions from corporate sources.

Key actions that have already been advanced by Corporate Services include but is not limited to:

- The installation of solar-powered parking meters in the downtown;
- The construction of the Oshawa City Hall Revitalization Project which was built to the Leadership in Energy and Environmental Design (“L.E.E.D.”) Silver Standard;
- The development of Business Travel Policy which promoted more efficient modes of travel;
- The development of Sustainable Meeting Guidelines; and,
- The provision of training for program and operational staff at City recreational facilities and fire halls to reduce electricity and gas consumption.

In addition to the City's voluntary efforts to reduce its carbon footprint, the City is mandated by O. Reg. 507/18 under the Energy Act, 1998, to prepare a Corporate Facilities Energy Management Plan (C.F.E.M.P.) and update it every five years.

On June 24, 2019, City Council considered Report CORP-19-62 dated June 12, 2019 concerning an update to the C.F.E.M.P., and adopted the following recommendation:

“That the Corporate Facilities Energy Management Plan 2019 – 2023, dated June 12, 2019, as set out in Attachment 1 to Report CORP-19-62, be endorsed.”

A C.F.E.M.P. supports the goals and targets set out in the City’s Corporate Plan.

5.3 The City of Oshawa Community Greenhouse Gas Reduction Plan

5.3.1 Background

On December 18, 2017, City Council considered Report DS-17-197 dated November 30, 2017 concerning the proposed Terms of Reference for the City’s Community G.H.G. Reduction Plan under the P.C.P. Program, and adopted the following recommendation:

“That pursuant to Report DS-17-197 dated November 30, 2017, City Council endorse the Terms of Reference, as outlined in Section 5.4 of said Report, for the preparation of the City’s Community Greenhouse Gas (G.H.G.) Reduction Plan under the Federation of Canadian Municipalities’ Partners for Climate Protection Program.”

The Council-approved Terms of Reference outlined the goal, objectives, scope and community and stakeholder engagement strategy for the Milestone 3 Community G.H.G. Reduction Plan.

5.3.2 Consultation on the January 2020 Draft Community Greenhouse Gas Reduction Plan

On January 27, 2020, City Council considered Report DS-20-08 dated January 8, 2020 regarding the January 2020 Draft Plan and adopted the following recommendation:

- “1. That, pursuant to Report DS-20-08 dated January 8, 2020, City Council approve, in principle, the Draft Community Greenhouse Gas Reduction Plan dated January 2020 for Milestone 3 of the Partners for Climate Protection Program for the purposes of holding a public meeting and obtaining community input.
2. That, pursuant to Report DS-20-08 dated January 8, 2020, staff be authorized to hold a public meeting of the Development Services Committee on the Draft Community Greenhouse Gas Reduction Plan, with advertisements in the local newspapers and communicated through the City’s social media accounts and websites.
3. That City Council endorse an interim greenhouse gas emission reduction target of 30% below the 2007 baseline levels by 2030.

4. That staff be authorized to seek public and stakeholder input on the Draft Community Greenhouse Gas Reduction Plan including online and paper surveys.”

5.3.2.1 Public Consultation

Staff undertook a 24-day public consultation process beginning on June 15, 2020 and concluding on July 9, 2020 to engage community members on the January 2020 Draft Plan.

The consultation process was comprised of various engagement initiatives that included the use of Connect Oshawa (www.connectoshawa.ca), the City’s online engagement platform. Engagement opportunities consisted of the following:

- A non-statutory Public Meeting of the Development Services Committee, held on June 25, 2020 regarding the January 2020 Draft Plan;
- A feedback form available online on Connect Oshawa or by telephone with Service Oshawa at 905-436-3311 during regular business hours.

The opportunity for the public to participate in the consultation process was promoted to the community and stakeholders through various mediums, including social media and print (i.e. newspaper ads) and digital promotional material.

Below is a breakdown of the responses received by staff throughout the public engagement process on the January 2020 Draft Plan. In total:

- 22 people completed the online feedback;
- 100% of respondents said they had reviewed the January 2020 Draft Plan;
- 72% of respondents said they generally supported the January 2020 Draft Plan objectives; and,
- 72% of respondents said it was very important to them that the City of Oshawa reduce its greenhouse gas emissions.

The following is a summary of the comments received from the feedback form:

- Climate change is a great risk to humanity and the City should encourage individuals, families, businesses and organizations in Oshawa to take steps towards being more sustainable.
- The City does not have the resources or authority to impact community usage and should focus on what it has control over.
- Add further detail on increasing cycling infrastructure, home energy incentives and how to encourage active transportation.
- The City should collaborate with the Region.

- The City should be reasonable with tax dollars and only undertake activities that will be effective in reducing G.H.G. emissions.
- Oshawa is on the right track with forward-thinking strategies, policies and measurable goals.
- Supporting further development of the downtown is essential.
- The existing cycling infrastructure is limited and should be expanded to encourage active forms of transportation.
- The City should explore local/regional road closures for cycling on weekends, similar to ActiveTO.
- The City should consider installing charging stations for electric bikes and scooters.

The input received during the public consultation process on the January 2020 Draft Plan was considered in the development of the November 2020 Plan (see Attachment 1).

5.3.2.2 Stakeholder Consultation

Staff specifically engaged and requested comments from the groups identified as potential partners and other stakeholders for each Action and Opportunity in the January 2020 Draft Plan. Table 1 provides a list of the potential partners and stakeholders who were invited to provide comments on the January 2020 Draft Plan.

Table 1: Stakeholder Input on the January 2020 Draft Plan

Stakeholder	Comments Provided (Y/N)
Durham Region	Y – written comments provided
Durham area municipalities	N
O.P.U.C.	Y – written comments provided
C.L.O.C.A.	Y – written comments provided
F.C.M.	Y – written comments provided
D.H.B.A.	Y – phone meeting with representatives from the D.H.B.A.
O.E.A.C.	Y – written comments provided

The following is a summary of the comments received from the stakeholder consultation regarding the January 2020 Draft Plan:

- The City should demonstrate its commitment to environmental responsibility by supporting a new pilot reforestation/afforestation program in rural areas, in partnership with C.L.O.C.A.
- Each objective should be presented with specific metrics to be achieved with a specific timeline.

- The City should include more information regarding how stakeholders participated in the development of the November 2020 Plan (e.g. date and format of public consultation meetings).
- Coordinated implementation of the November 2020 Plan and the Durham Community Energy Plan will be critical to their collective success.
- Any programs that exceed legislative requirements, such as the Ontario Building Code, should be voluntary for the building and development industry to implement.
- The City should consider working via the Oshawa Chamber of Commerce and/or Business Improvement Areas to promote sustainable business operations.
- Given that the baseline G.H.G. inventory was completed in 2010, the November 2020 Plan should note the significant impact of Ontario's coal phase-out (completed in 2014) on Oshawa's corporate and community G.H.G. emissions.
- The City should consider updating the 2010 G.H.G. inventory to reflect the current state and should collaborate with the Region and other area municipalities to ensure consistency in methodologies used.
- On October 21, 2020, O.E.A.C. considered OEAC-20-19 dated October 16, 2020 and adopted the following recommendation:

“That the Oshawa Environmental Advisory Committee endorse the City of Oshawa Draft Community Greenhouse Gas Reduction Plan as set out in Report DS-20-72 dated June 20, 2020”, as amended by later vote to include the following comments:

“That Action 1 (Increase electricity generation from renewable sources associated with residential buildings) and Action 3 (Increase electricity generation from renewable sources associated with commercial buildings) read as “explore and identify potential residential/commercial renewable electricity generation projects within the City”, and this could be strengthened to ‘identify and implement’;

That Action 2 (Improve energy performance in residential buildings) and Action 4 (Improve energy performance in commercial buildings) be revised as follows:

- “Exploring opportunities for Oshawa residents to participate in the Durham Deep Retrofit Program for residential buildings”. Based on the values in Appendix A, emission reductions from residential, commercial and institutional buildings provide a significant opportunity for Oshawa to reach its emission reduction targets. The Durham Deep Retrofit program for residential and deep retrofits for commercial buildings will provide an excellent avenue for reductions in existing buildings. The City can strengthen its role in the delivery of this program, by ‘encouraging’ residents to participate. A new action or amendment to that action could identify

working in partnership with Durham Region to design, deliver and monitor the deep retrofit program.

- “Working in partnership with Durham Region to investigate advancing on a volunteer basis, the Durham Green Standard program identified in the D.C.E.P”. While existing buildings contribute more significantly to current GHG emissions, the energy performance of new construction will reduce the need for retrofits in the future. The Durham Green Standard program identifies a “tiered set of performance measures implemented through the planning approval process and notes that it can be implemented by Area Municipalities or can build on Area Municipality green development standards”. The Town of Whitby has recently adopted the Whitby Green Standard – a toolkit designed to help encourage and enhance sustainable new development. There is an opportunity to consider making the action Oshawa specific and/or identify other opportunities for partnership and alignment such as the Whitby Green Standard. Develop an Oshawa-specific “green standard”, modeled on the Whitby Green Standard. Can we give local corporations some sort of recognition for efforts/meeting standards at the local level?
- Action 4 to reference commercial owners and operators, not residents since it is a commercial action;

That Action 5 (Promote low carbon or no carbon vehicles) be revised as follows:

- This is a critical action to reducing emissions across the community.
- The actions identified in this section can be strengthened by removing the focus from exploration to action and implementation.
- Shifting towards the use of EVs while exploring development of policies to encourage and increase public transit usage and utilize planning to that end;

That Action 7 (Coordinate land use policies to establish a built form that promotes sustainable growth) be revised as follows:

- The integration of targets and actions into land use and other aligned City policies and bylaws is a key tool to support implementation.
- Explore the possibility of green roofs in Oshawa;

That Opportunity 3 (Strengthen the City’s capacity to be a leader in sustainability and implement the actions in this Plan) reference saving and planting more trees and meadows in order to maintain cleaner air;

That the City consider adopting a Net zero target for 2050, instead of an 80% reduction by 2050; and,

That the Plan add stipulations for revisiting the Plan/assessing progress every five years.”

The input received from the stakeholders was considered and incorporated, as appropriate, in the development of the November 2020 Plan (see Attachment 1). A summary of the key changes can be found in the following section.

5.3.2.3 Key Changes

As a result of consultation and further investigation, the following key changes have been made to the January 2020 Draft Plan at the request of C.L.O.C.A., O.P.U.C., O.E.A.C., Durham Region, D.H.B.A., F.C.M. and the public consultation. These changes are now reflected in the November 2020 Plan:

- Section 1.0 – Introduction, was revised as follows:
 - Language was added to provide that land development patterns and building design are key issues addressed in the November 2020 Plan, as it relates to Action 7. This change is reflected throughout the November 2020 Plan, where appropriate.
 - Language was added to clarify that the 2007 Study completed by Eco-Business Network informed the setting of G.H.G. emissions targets for the City.
- Section 2.0 – Reducing our Greenhouse Gas Emissions, was revised as follows:
 - A “Did you know...?” section was added to provide further clarity on the G.H.G. emissions reduction in Oshawa from 2007 to 2015.
 - The estimated eCO₂ equivalent metrics were updated to provide further clarity on the impact of total and per capita G.H.G. emissions and provide more tangible ways of reducing G.H.G. emissions at the individual level.
 - Figures 5 and 6 were added to provide further clarity on the overall trend of G.H.G. emissions and energy consumption in Oshawa.
 - Language was added to include the Growth Plan for the Greater Golden Horseshoe population estimate for Durham Region.
 - Language was added to provide further clarity on the public consultation process related to the development of the November 2020 Plan.
- Section 3.0 – Framing the Plan, was revised as follows:
 - Language was revised to reflect the updated Oshawa Strategic Plan, Our Plan for Success, 2020-2023.
 - Key Metrics were added to each Action and Opportunity identified in the November 2020 Plan to monitor the City’s progress as the Actions and Opportunities are implemented. A summary of the Key Metrics can be found in Appendix B of the November 2020 Plan and will be monitored every five (5) years.
 - Language was added to reference the Durham Home Energy Savings Program, which relates to the Durham Deep Retrofit Program under the D.C.E.P.

- Language was added to provide additional information on what habits at work and school can have an impact on G.H.G. emissions.
 - Action 2 was revised to provide that staff will encourage Oshawa residents to participate in the Durham Home Energy Savings Program.
 - Actions 2 and 4 were revised to provide that staff will explore opportunities to advance rooftop gardens through the development approval process.
 - Action 7 was revised to reference the Provincial Growth Plan and Greenbelt Plan and C.L.O.C.A.'s Watershed Plans.
 - Action 7 was revised to include the protection of existing natural features and systems and explore opportunities to include targeted natural heritage restoration in the development process, where feasible.
 - Opportunity 1 was revised to provide that staff will work with the Oshawa Chamber of Commerce and the Oshawa Central Business District Improvement Area members to engage with local businesses and provide information on available energy savings initiatives, sustainable procurement policies and available renewable energy incentives.
 - Opportunity 3 was revised to provide that staff will explore opportunities to encourage tree planting initiatives both on City-owned and privately-owned land.
 - Opportunity 3 was revised to provide that staff will explore opportunities to partner with C.L.O.C.A. to support reforestation/afforestation projects in rural areas.
 - The table in Section 3.7 was revised to provide a high level summary of the Actions and Opportunities identified in the Plan, the associated environmental benefits and existing related plans. Additional information related to the implementation of the November 2020 Plan (i.e. partners, financial information, status and timing and public acceptance) can be found in Appendix A.
- Section 4 Next Steps: Implementing the Plan, was revised as follows:
 - Language was added to provide that staff will work with Corporate Communications to announce the Council-approved November 2020 Plan (e.g. media release, the City's social media accounts, etc.). Staff will also continue to update the City's Climate Change website, as appropriate.

5.3.3 November 2020 Plan Summary

5.3.3.1 Objectives

The November 2020 Plan builds on existing policies and plans such as the O.S.P., O.O.P., I.T.M.P. and A.T.M.P. Staff also reviewed community action plans and G.H.G. reduction plans of various municipalities across Canada to help inform the development of the November 2020 Plan.

The key objectives of the November 2020 Plan are to:

- Increase renewable energy use;
- Implement policy that promotes energy efficiency in buildings and transportation; and,
- Promote sustainability through leadership and education.

5.3.3.2 Actions and Opportunities

The November 2020 Plan identifies seven (7) Actions under the themes of at home, at work and school and on the move. These Actions will help to reduce G.H.G. emissions and provide additional environmental, economic and social benefits to the City of Oshawa. The Actions are as follows:

Actions at Home

1. Increase electricity generation from renewable sources associated with residential buildings;
2. Improve energy performance in residential buildings;

Actions at Work and School

3. Increase electricity generation from renewable sources associated with I.C.I. buildings;
4. Improve energy performance in I.C.I. buildings;

Action on the Move

5. Promote low carbon or no carbon vehicles;
6. Increase/improve cycling and walking infrastructure to encourage active forms of transportation; and,
7. Coordinate land use policies to establish a built form that promotes sustainable growth.

The Plan also identifies three (3) additional Opportunities that may help to reduce G.H.G. emissions and result in a positive impact on the environment. The Opportunities are as follows:

1. Promote energy efficient business operations;
2. Promote sustainable practices through strategic outreach and education; and,
3. Strengthen the City's capacity to be a leader in sustainability and implement the actions in the November 2020 Plan.

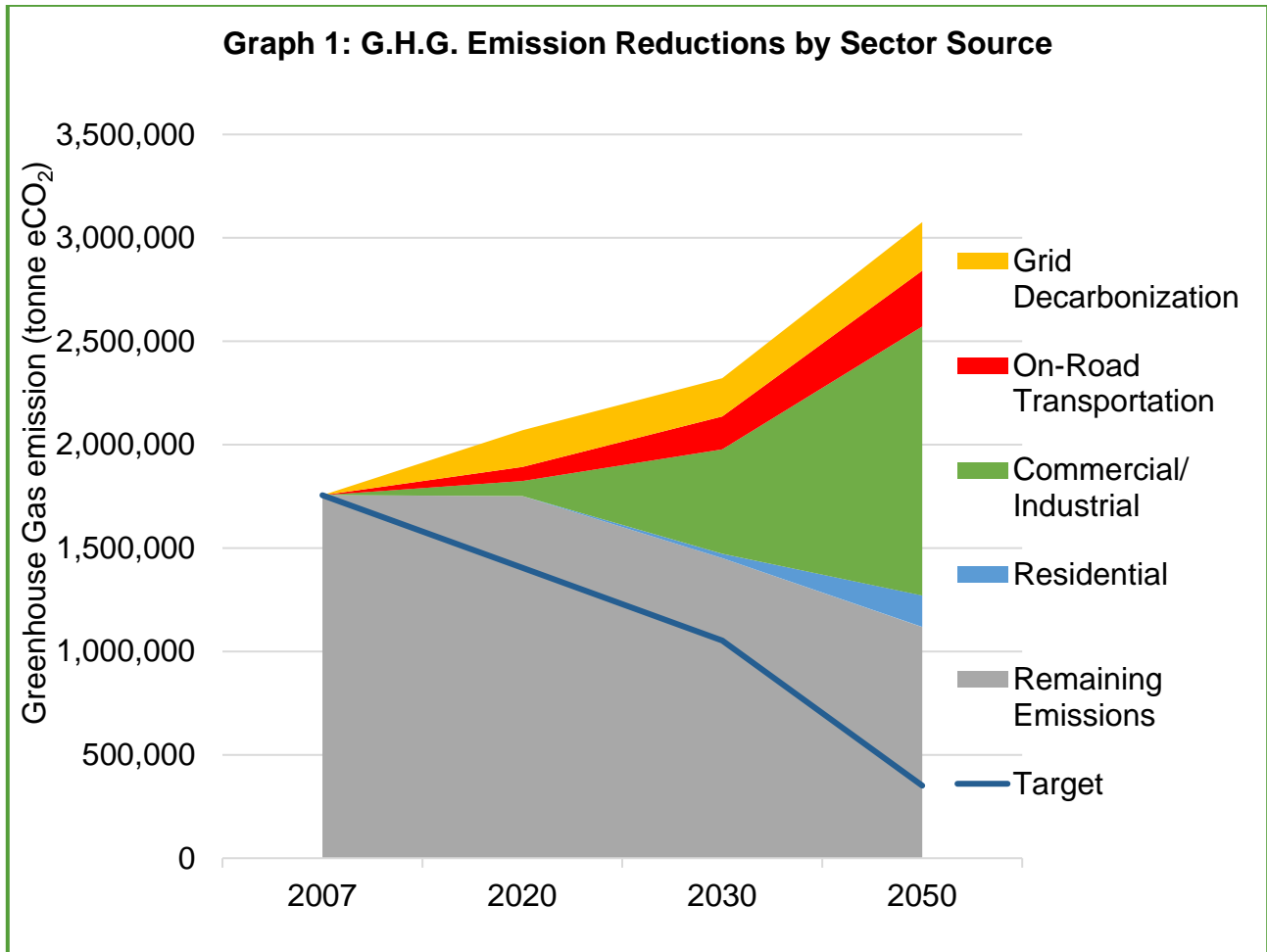
A detailed breakdown of the Actions and Opportunities and their associated G.H.G. emission reductions, additional benefits and key partners can be found in the November 2020 Plan (see Attachment 1).

The November 2020 Plan also identifies Key Metrics for each Action and Opportunity that will be monitored on an ongoing basis (see Appendix 'B' of the November 2020 Plan). The purpose of the Key Metrics is to monitor the City's progress as the Actions and Opportunities are implemented.

5.3.3.3 Estimated Outcomes

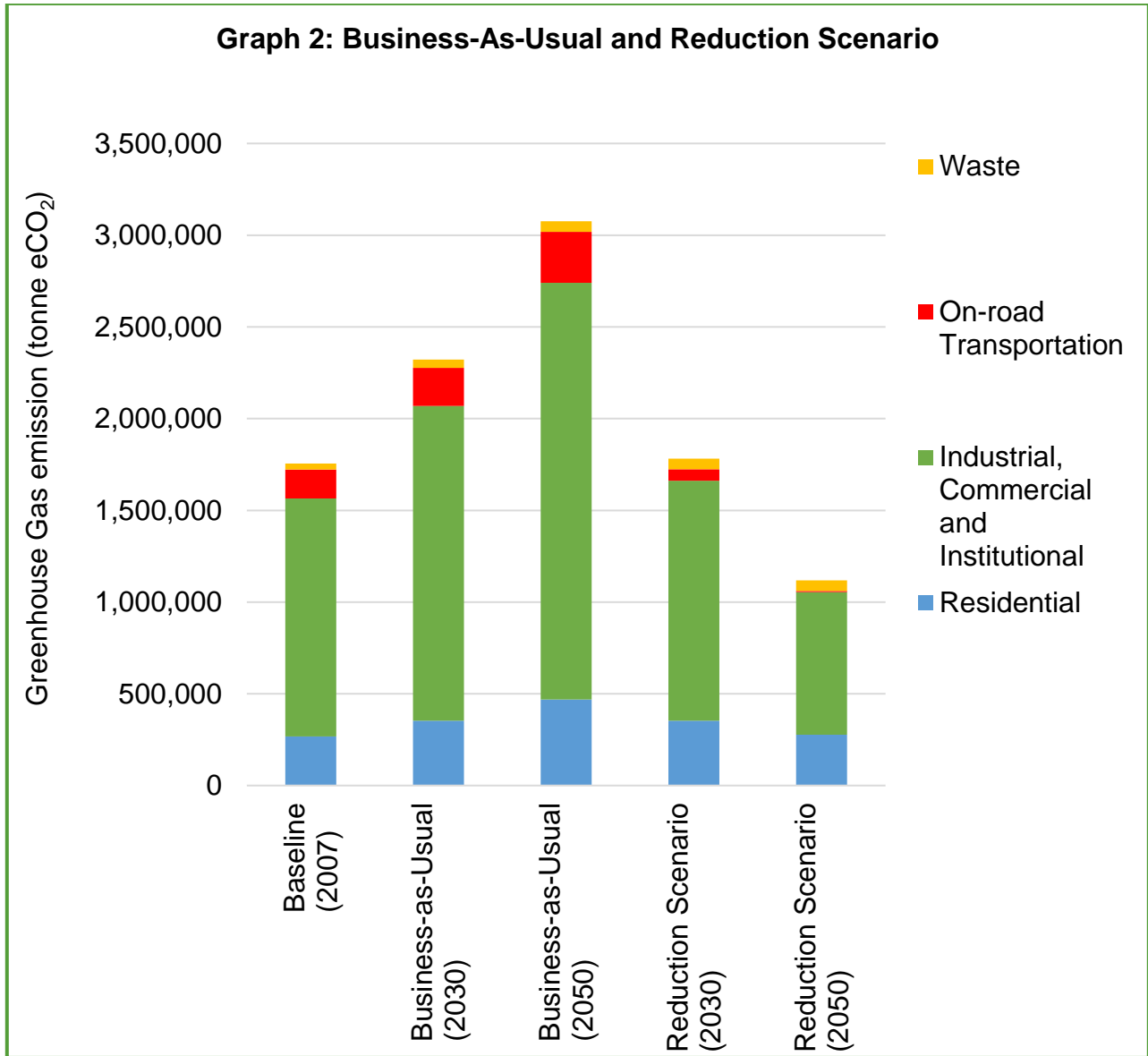
In consultation with the I.C.L.E.I., staff used the online Milestone 3 Scenario Builder Tool provided by F.C.M. and I.C.L.E.I. to estimate the potential G.H.G. emission reductions from the various actions identified in the November 2020 Plan. The Scenario Builder shows the potential of different mitigation actions to reduce the G.H.G. emissions and allows users to select policy options, prioritize measures for implementation, and report on anticipated future impacts.

The various Actions identified in the November 2020 Plan may help reduce G.H.G. emissions from the following sectors: residential, I.C.I. and transportation. The following graph shows the emissions reduction by sector and the remaining emissions to achieve the City’s identified reduction targets of 20% by 2020, 30% by 2030 and 80% by 2050 from the 2007 baseline (see Graph 1).



The data analysis showed that if Oshawa were to continue under a “Business-as-usual” scenario (i.e. assumes that there will be no significant change in behaviour, priorities or policies), G.H.G. emissions in Oshawa are estimated to increase 75% by 2050 from 2007 levels. However, under the Reduction Scenario (i.e. implementation of the Actions and

Opportunities identified in the November 2020 Plan), G.H.G. emissions in Oshawa are estimated to decrease 17% by 2030 and 37% by 2050 from 2007 levels (see Graph 2).



The G.H.G. emission reductions under the Reduction Scenario do not achieve the City’s target of an 80% reduction in community G.H.G. emissions by 2050 from 2007 levels. The City is currently estimating a reduction of 37%. Not achieving the target is attributed mainly to the projected population increase in Oshawa and across Durham Region. Nevertheless, it is important to not draw any early conclusions from the analysis.

The results from the Scenario Builder should be understood as high-level estimates, rather than a forecast of future emissions. Furthermore, the estimate does not account for the

following, which may help in the future to achieve the target reduction of 80% by 2050 even in the face of an increased population:

- Opportunities identified in the November 2020 Plan that are difficult to quantify (i.e. education programs, decision-making tools, etc.);
- More efficient technological advances that may be available in the future; and,
- Carbon sequestration initiatives that may help to reduce G.H.G. emissions (i.e. afforestation, reforestation, etc.).

Oshawa's anticipated growth presents the City and the Community with a unique opportunity to show leadership in reducing G.H.G. emissions while accommodating a rapidly increasing population. The outcome of the Actions identified in the November 2020 Plan and their associated co-benefits will have a positive impact on Oshawa residents.

5.4 Next Steps to Plan Implementation

Staff will submit the November 2020 Plan to F.C.M. to satisfy the Milestone 3 requirement of the P.C.P. Program. Upon approval by F.C.M., staff will work to advance the Actions and Opportunities identified in the November 2020 Plan and report back to Committee and Council, as needed.

Upon Council adoption and F.C.M. approval of the November 2020 Plan, staff will work with Corporate Communications to announce and distribute the November 2020 Plan (e.g. media release, the City's social media accounts, etc.). Staff will also continue to update the City's Climate Change website, as appropriate.

6.0 Financial Implications

There are no financial implications associated with the recommendations in this Report.

The estimated cost of implementing each Action and Opportunity is identified in Attachment 1. Implementation of the Actions and Opportunities identified in Attachment 1 will require future budget approval as necessary.

7.0 Relationship to the Oshawa Strategic Plan

The recommendations in this report advances the Economic Prosperity and Financial Stewardship, Accountable Leadership, Social Equity and Environmental Responsibility goals of the Oshawa Strategic Plan.



Tom Goodeve, M.Sc.Pl., MCIP, RPP, Director,
Planning Services



Warren Munro, HBA, RPP, Commissioner,
Development Services Department



City of Oshawa Community Greenhouse Gas Reduction Plan



November 2020

Executive Summary

The Oshawa Community Greenhouse Gas Reduction Plan was completed as a Council priority through the Federation of Canadian Municipality's Partners for Climate Protection program. In coordination with the Oshawa Strategic Plan, Official Plan, Integrated Transportation Master Plan and the Active Transportation Master Plan, this Plan provides guidance on how to reduce community-wide emissions over the short and long term. Through the Partners for Climate Protection program, the City has developed and continues to implement a Corporate Plan, which outlines the actions that will assist the City in conserving energy, reducing energy consumption and greenhouse gas emissions from corporate sources. More recently, the City has endorsed the Corporate Facilities Energy Management Plan in fulfillment of the Government of Ontario's Regulation 507/18 under the Energy Act, 1998.

This Plan was developed through a collaborative process with the public and key community stakeholders. This Plan emphasizes integrating existing initiatives to avoid the duplication of effort, and collaborating with community and industry leaders to work towards a more sustainable future. Oshawa residents were invited to participate in a public workshop and complete a survey to share their ideas on how to combat climate change through the development and implementation of this Plan.

In 2010, City Council endorsed the following Community and Corporate greenhouse gas emission reduction targets (based on a 2007 baseline):

- 5% reduction by 2015;
- 20% by 2020;
- 30% by 2030; and,
- 80% by 2050.

The goal is to develop a plan that is comprehensive, collaborative and community-driven, while recognizing existing regional and local climate change and energy conservation initiatives, policies and plans that already provide direction. This Plan's objectives are to increase renewable energy use, implement policy that reduces greenhouse gas emissions from building and transportation sources and promote sustainability through leadership and education.

In Oshawa, most greenhouse gas emissions come from the use of electricity, natural gas, gasoline and diesel. Research and stakeholder input identified three key areas of focus for reducing greenhouse gas emissions: at home (residential), at work and school (industrial/commercial/institutional) and on the move (transportation). The various Actions and Opportunities identified in this Plan are characterized under one or more of these areas.

It is important to note that the City cannot meet these community targets on its own and that all community members and stakeholders need to take action. All residents, visitors, businesses, organizations and governments have an important role to play in reducing greenhouse gas emissions in Oshawa.

The City will oversee the implementation of this Plan and work collaboratively to initiate its Actions and Opportunities, as well as monitor and measure progress. The City will also

continue to reduce its corporate emissions through the Corporate Plan and the Corporate Facilities Energy Management Plan.

The approval and implementation of this Plan will have a strong positive impact on the City of Oshawa, including the potential social, economic and environmental benefits that can be achieved. The City of Oshawa is committed to working with our strategic partners to become a more sustainable community.

Message from the City of Oshawa

[Insert message from CAO/Mayor after approved]

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1.0 Introduction

1.1 The Climate Context

What is Causing Climate Change?

Climate change is the significant long-term shift in the expected patterns of average weather over a substantial period of time, and is often referred to as anthropogenic climate change (i.e. caused by human activity). Over the last century, the burning of fossil fuels (such as coal and oil) has increased the atmospheric concentration of Carbon dioxide (CO₂), resulting in a greenhouse gas effect and increased temperatures. Greenhouse gasses (G.H.G.) naturally occur in the environment (e.g. volcanic eruptions, forest fires, etc.), but the G.H.G.s emitted from these events is considered to be nominal and do not drastically affect the global climate. Other sources of G.H.G.s that are caused by human activities, such as the burning of fossil fuels for energy, waste management practices and gasoline emissions from automobiles, all contribute to a significant amount of G.H.G.s being released into the atmosphere.

Greenhouse Gas Effect

The greenhouse gas effect is the process by which radiation (heat) from the Earth is trapped by the atmosphere and warms the planet's surface temperature. This is a natural process that is critical to supporting life. However, human activities (such as the burning of fossil fuels) have accelerated the greenhouse gas effect, resulting in global warming.

In 2011, the G.H.G. emissions in Oshawa were comprised of natural gas used for heating buildings (60%), gasoline (18%) and diesel (12%) for automobiles, electricity for lighting and appliances (7%), fuel oil (1%) and propane (2%) and community waste (0.7%). G.H.G. emissions are also linked to land use decisions (e.g. walkable communities versus urban sprawl), agricultural activities and waste management practices. Note: Values in this paragraph do not total 100% owing to rounding.

What Does Climate Change Mean To Oshawa?

Climate change is the most significant challenge that we are facing today and records show that temperatures in Oshawa and around the world are rising. Natural Resource Canada published, *Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation* (2014), which highlighted trends of Canada's changing climate. This document reported that the Canadian landmass has warmed 1.5 degrees Celsius from 1950 to 2010, and it is projected that national temperatures will increase an additional 1.5 to 2.5 degrees Celsius by 2050, with the most significant warming to occur during the winter and spring. Furthermore, the Ministry of Environment, Conservation and Parks (M.E.C.P.) reported that the average

temperatures in Ontario are projected to rise by approximately 2.5 to 3.7 degrees Celsius by 2050, exceeding the national projections. Cities across Ontario have experienced the extreme weather conditions associated with climate change, such as ice storms and severe flooding. Oshawa residents have experienced the impacts of climate change first hand from the heavy rainfall and flooding of Harmony Creek and Oshawa Creek, rising water levels in Lake Ontario, shoreline erosion and severe wind and ice storms. Extreme weather events caused by climate change pose a significant threat to cities all over the world, and it is important to mitigate the impacts of climate change as much as we can.

Oshawa Community

The City of Oshawa is the largest and fastest growing local area municipality in Durham Region.

By the Numbers:

- Land area: 145.65 km²
- Population in 2007: 148,982
- Population in 2019: 172,434
- Population (forecast) in 2020: 175,709
- Population (forecast) in 2030: 197,014
- Population (forecast) in 2050: 261,076

What Can We Do About Climate Change?

As the planet warms and extreme weather events become more frequent, the impacts of climate change are hitting closer to home with more heat waves, droughts, floods, and the loss of plant and animal species. It can be difficult to imagine what we as individuals and as a community can do to resolve a problem of this magnitude. The good news is that many of the activities that contribute to climate change are influenced by decisions that are made at a local level. Industries, businesses, schools, and residents in Oshawa can help combat climate change by taking action **at home, at work and school, and on the move.**

The City of Oshawa municipal operations (i.e. facilities, vehicles, streetlights, etc.) only account for approximately 1% of Oshawa’s annual G.H.G. emissions (see Figure 1).

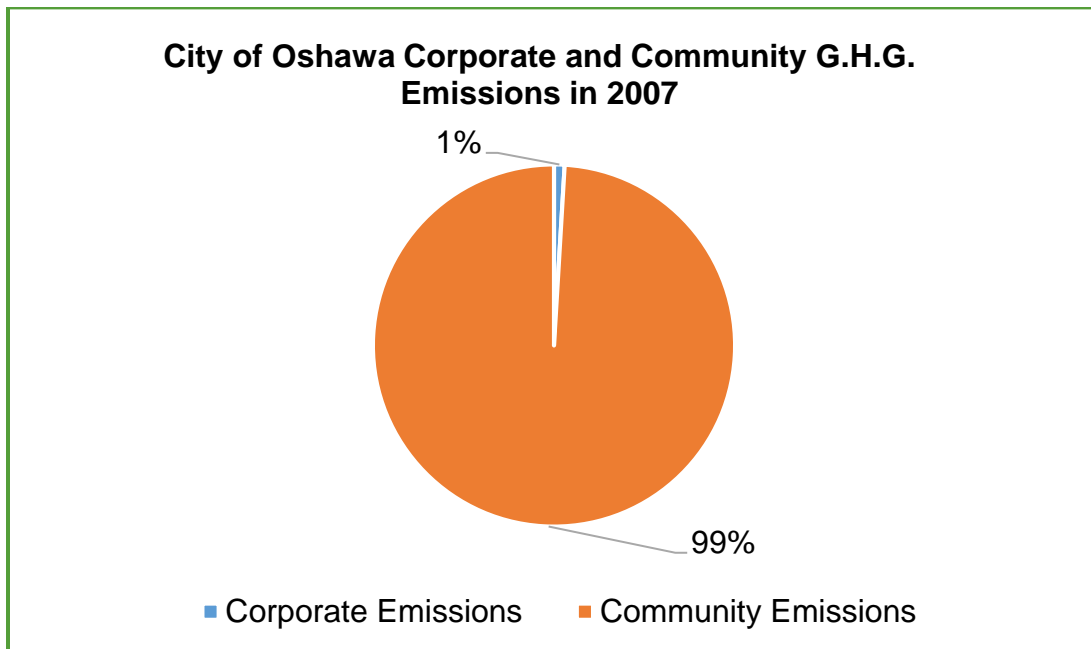


Figure 1: City of Oshawa Corporate and Community Greenhouse Gas emissions (2007)

Unfortunately, even if corporate G.H.G. emissions become net-zero by 2050, the City as a whole may not meet its total G.H.G. reduction target. However, this Plan outlines specific Actions and Opportunities that will significantly help reduce community G.H.G. emissions in Oshawa.

1.2 Partners for Climate Protection Program

The Federation of Canadian Municipalities (F.C.M.) brings together municipal leaders from across the country to discuss and establish policies on key issues such as land development patterns, building design, affordable housing, public transit, clean water and climate change. The Partners for Climate Protection (P.C.P.) Program was developed by the F.C.M. in partnership with the International Council for Local Environmental Initiatives (I.C.L.E.I.), and works to create a network of Canadian municipalities who are committed to reducing G.H.G. emissions. The P.C.P. Program uses a five-milestone framework to help municipalities reduce G.H.G. emissions from both corporate and community sources and aims to provide support to municipal and regional governments in identifying and addressing local sources of G.H.G. emissions.

In April 2009, the City of Oshawa, along with over 200 other Canadian municipalities, became a member of the P.C.P. Program, and committed to taking action against climate change by reducing G.H.G. emissions. Through this program, the City of Oshawa

committed to participating in the five-milestone framework, to ultimately develop and implement both corporate and community action plans (see Figure 2).

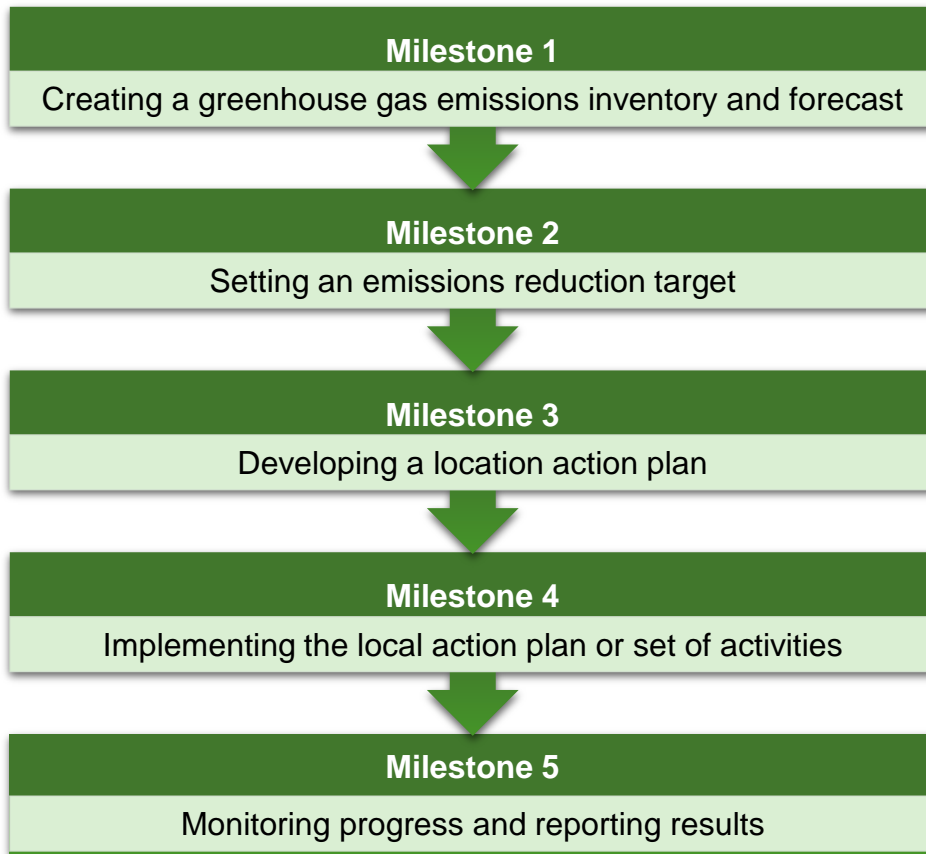


Figure 2: Five-Milestone Framework for the P.C.P. Program by the Federation of Canadian Municipalities

In 2010, Oshawa completed Milestones 1 and 2 for the community action plan, by establishing and submitting a G.H.G. emissions inventory and establishing G.H.G. emissions reduction targets. This Plan, once approved, will satisfy the requirements for Milestone 3 of the P.C.P. program.

Oshawa's Corporate Initiatives – Corporate Facilities Energy Management Plan

- ❖ Optimize energy efficiency without compromising the delivery of services or sacrificing occupant comfort;
- ❖ Promote the use of cleaner, sustainable energy sources in order to reduce G.H.G. emissions;
- ❖ Use renewable energy where feasible;
- ❖ Promote energy efficiency throughout the City's operations by linking the Energy Management Plan to all relevant departments; and,
- ❖ Provide G.H.G. emissions data for the energy used by the City's corporate inventory included in this plan.

In June 2019, City Council approved the Corporate Facilities Energy Management Plan (C.F.E.M.P.) that includes G.H.G. reduction measures such as vehicle fleet upgrades to energy efficient models or hybrid models, investigate alternative fuels for vehicle fleet, and provide Eco-Driver training to city staff who drive fleet vehicles. Oshawa has achieved all five milestones for the Corporate Plan.

2.0 Reducing our Greenhouse Gas Emissions

2.1 Where are we now

In 2010, City Council approved 2007 as the baseline year for setting G.H.G. emissions reduction targets under the P.C.P. Program. Eco-Business Network (formerly Durham Sustain Ability) was contracted to complete a baseline study of Oshawa's community G.H.G. emissions, comparing the following sectors: residential, industrial/commercial/institutional (I.C.I.), transportation and community waste (the "2007 Study"). This study informed the setting of G.H.G. emission targets for the City of Oshawa and the development of this Plan. The key findings are summarized in Section 2.2.

What is eCO₂?

Equivalent CO₂ (eCO₂) is a unit of measure that allows us to compare the emissions of different greenhouse gasses based on their global warming potential (G.W.P.). For example, the G.W.P. for Methane (CH₄) over 100 years is 21. This means that the emissions of one million metric tons of CH₄ is equivalent to the emissions of 21 million metric tons of CO₂.

2.2 Sources of G.H.G. Emissions

The 2007 Study revealed that most of Oshawa's G.H.G. emissions are a result of using natural gas to heat its homes and commercial buildings. The remaining G.H.G. emissions come from gasoline and diesel in vehicles and heavy equipment, and electricity across the residential and I.C.I. sectors with a nominal amount of G.H.G. emissions coming from community waste. In 2019, Environment and Climate Change Canada released *Canadian*

Did you know...?

The largest contributing factor to Oshawa's significant reduction in G.H.G. emissions from 2007 to 2015 is the decline in the provincial electricity emissions coefficient from the phase-out of coal power.

Environmental Sustainability Indicators: Greenhouse gas emissions, which noted that G.H.G. emissions in Ontario have decreased approximately 11% since 1990 even though the population has increased. The intent of this Plan is to continue to decrease G.H.G. emissions in Oshawa even as the population continues to grow.

The Study also showed that in 2007, the total G.H.G. emissions in Oshawa were

1,761,835 tonnes eCO₂ or 11.8 tonnes eCO₂ per capita. Furthermore, Oshawa's corporate operations only accounted for approximately 0.9% of the total G.H.G. emissions (including city buildings, street lights, fleet and fire services and solid waste). Whereas, community G.H.G. emissions accounted for 99.1% of the total emissions (including the I.C.I. sector, the residential sector, vehicle transportation and community waste) (see Figure 3). In 2007 the I.C.I. sector was the largest emitter of G.H.G. emissions (74%), followed by transportation (15%), residential (9%) and community waste (2%).

How much is 1,761,835 tonnes of eCO₂/year?

The total amount of G.H.G. emissions produced in Oshawa in 2007 is equivalent to:

- The amount of G.H.G. emissions produced by 345,305 passenger vehicles* driving 18,482 kilometers each year;
- The average amount of energy used by 210,985 homes each year; or,
- The same amount of eCO₂ sequestered by 29,133,968 ten-year old trees in one year.

What does this mean for me?

If we assume that each resident in Oshawa was contributing the same amount of G.H.G. emissions (11.8 tonnes of eCO₂/year) your G.H.G. emissions each year would be equivalent to:

- The amount of G.H.G. emissions produced driving 42,749 kilometers by an average passenger vehicle* each year;
- The average amount of energy used by 1.4 homes each year; or,
- The same amount of eCO₂ sequestered by 195 ten-year old trees in one year.

*Passenger vehicles are defined as 2-axel 4-tire vehicles, including passenger cars, vans, pickup trucks and sport/ utility vehicles.

In 2015, the City received an updated G.H.G. emissions inventory as part of the community inventory update for the Region of Durham (the “2015 Inventory”). The 2015 Inventory provided energy and emissions data for the 2007 baseline year, 2011 and 2015 and provided a breakdown of energy consumption and G.H.G. emissions by source (see Figures 3 and 4).

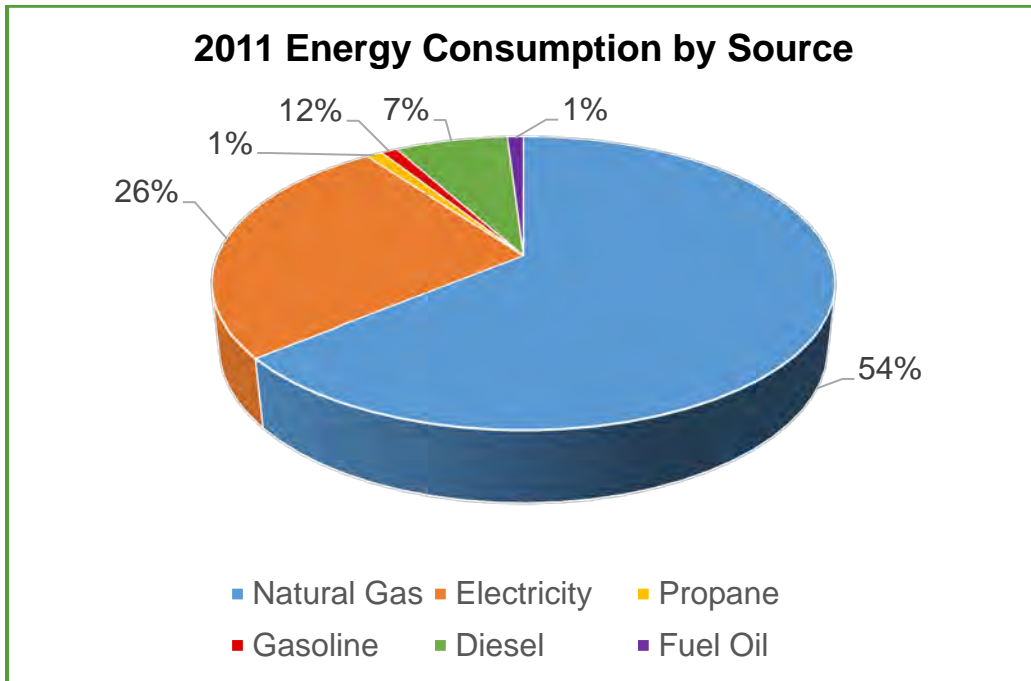


Figure 3: City of Oshawa community energy consumption by source (2011)

Note: Values in Figure 3 do not total 100% owing to rounding.

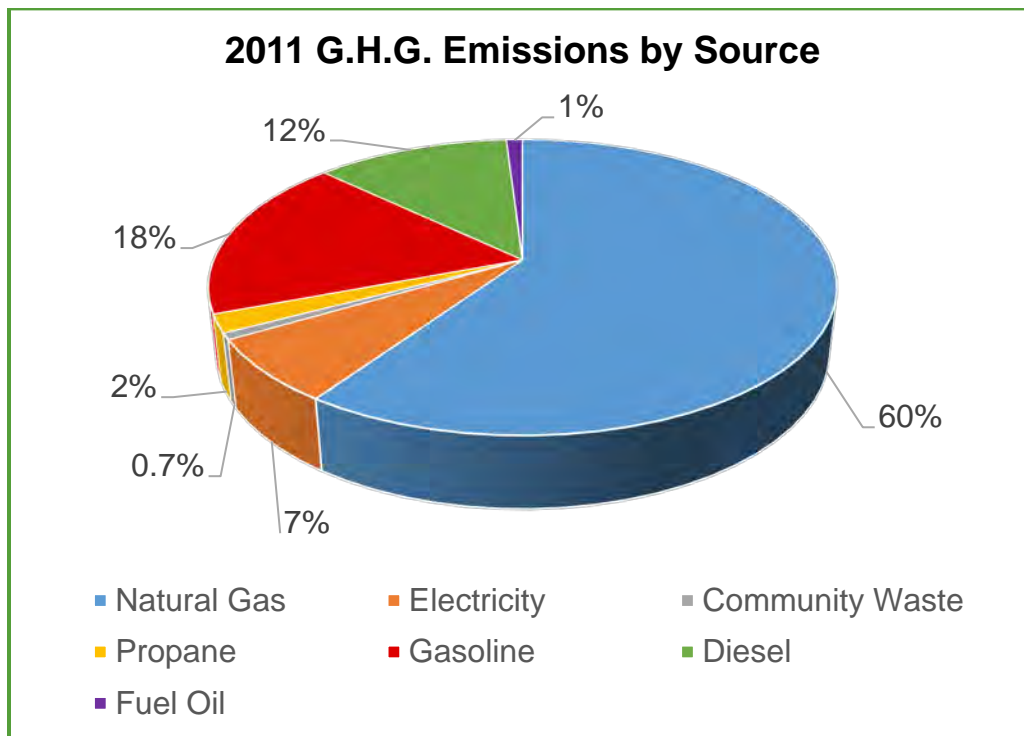


Figure 4: City of Oshawa community greenhouse gas emissions by source (2011)

Note: Values in Figure 4 do not total 100% owing to rounding.

From 2007 to 2015, total energy consumption decreased by 52.5% (see Figures 5 and 6). The 8.4% difference in the decline between G.H.G. emissions and energy consumption is mainly due to the decline in the provincial electricity emissions coefficient from the phase-out of coal power.

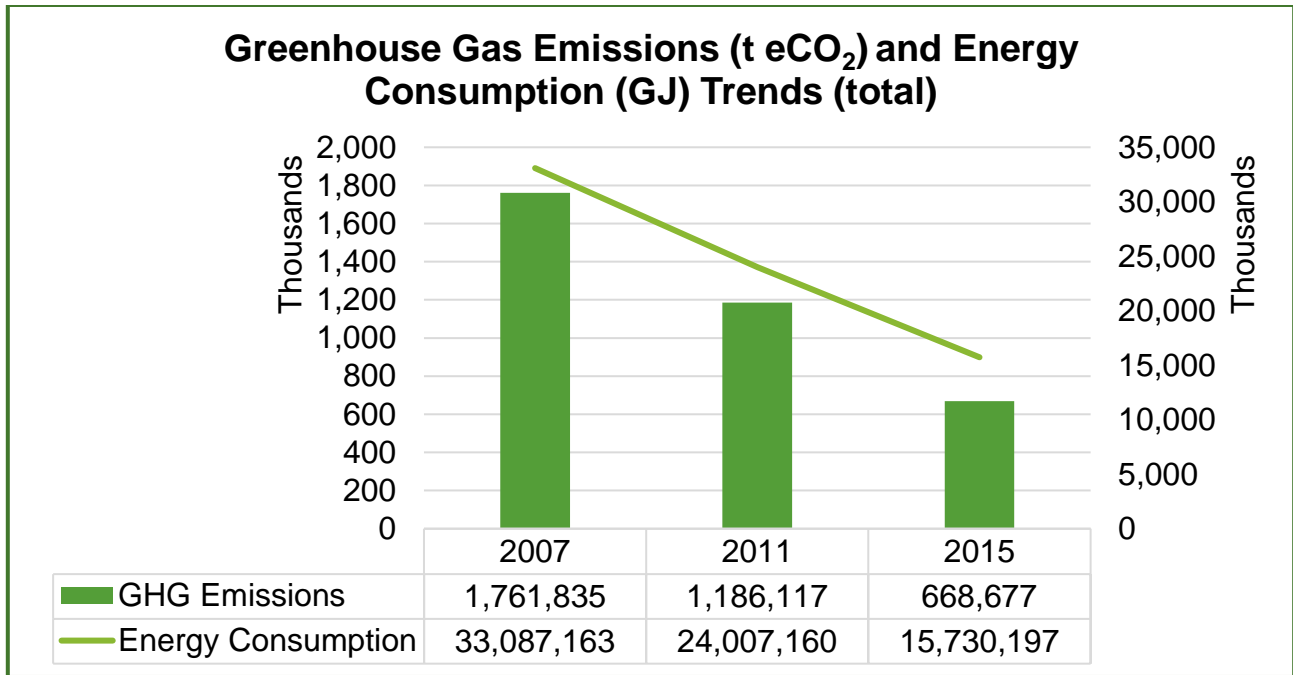


Figure 5: City of Oshawa greenhouse gas and energy consumption trends (total)

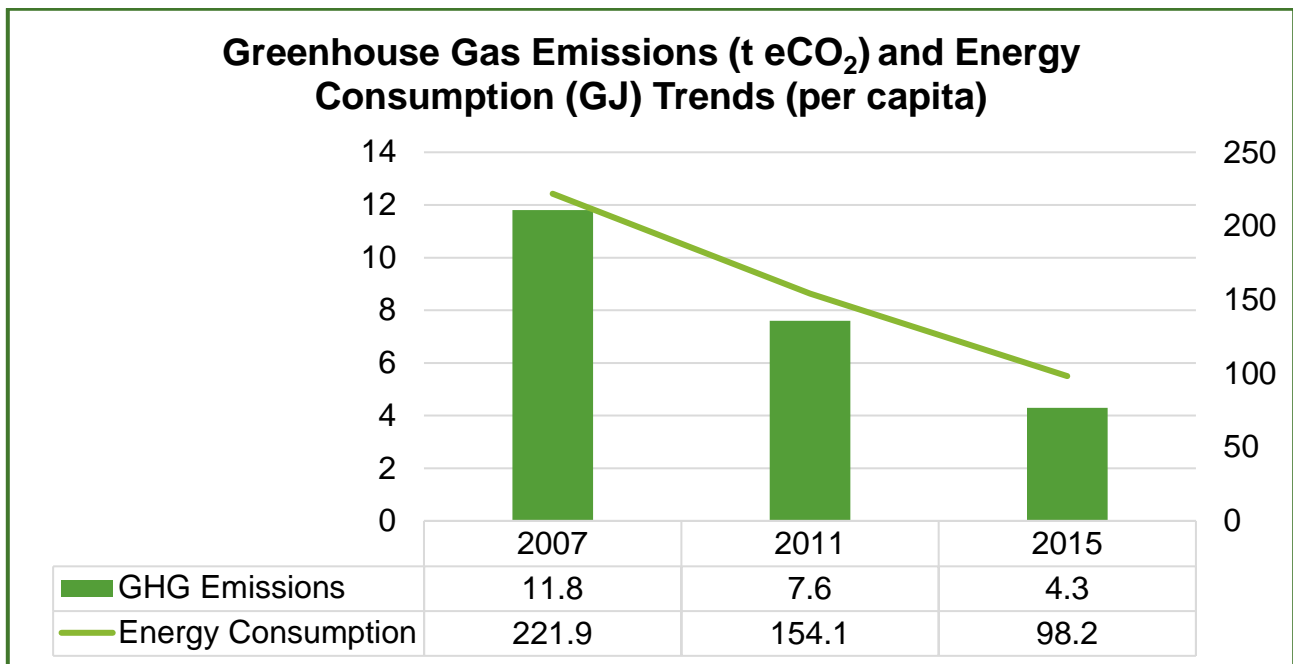


Figure 6: City of Oshawa greenhouse gas and energy consumption trends (per capita)

Oshawa is facing a challenge to reduce G.H.G. emissions while accommodating a rapidly growing population. The Growth Plan for the Greater Golden Horseshoe (the “Growth

Plan”) estimates that Durham Region’s population is expected to reach 1,300,000 by 2051. The City’s population is expected to grow significantly, reaching approximately 261,076 by 2050 (Source: I.C.L.E.I., 2019). If nothing is done to reduce emissions from community sources in Oshawa, G.H.G. emissions are projected to increase significantly. It is crucial that the City takes action to reduce G.H.G. emissions from all sources to mitigate the impacts of climate change.

Note: The projected 2050 population was provided by I.C.L.E.I. for the purposes of this Plan and is based on an annual growth rate of 1.4% in 2020 and 2030 and 2.2% in 2050.

2.3 A Path Forward

In consultation with I.C.L.E.I., City staff used the Milestone 3 Scenario Builder tool provided by F.C.M. and I.C.L.E.I. to estimate the potential G.H.G. emission reductions from the various Actions identified in this Plan. The various Actions identified in this Plan may help reduce G.H.G. emissions from the following sectors: residential, I.C.I. and transportation. The following graph shows the G.H.G. emissions reductions by sector and the remaining emissions to achieve the City’s identified targets of 20% by 2020, 30% by 2030 and 80% by 2050 (see Figure 7).

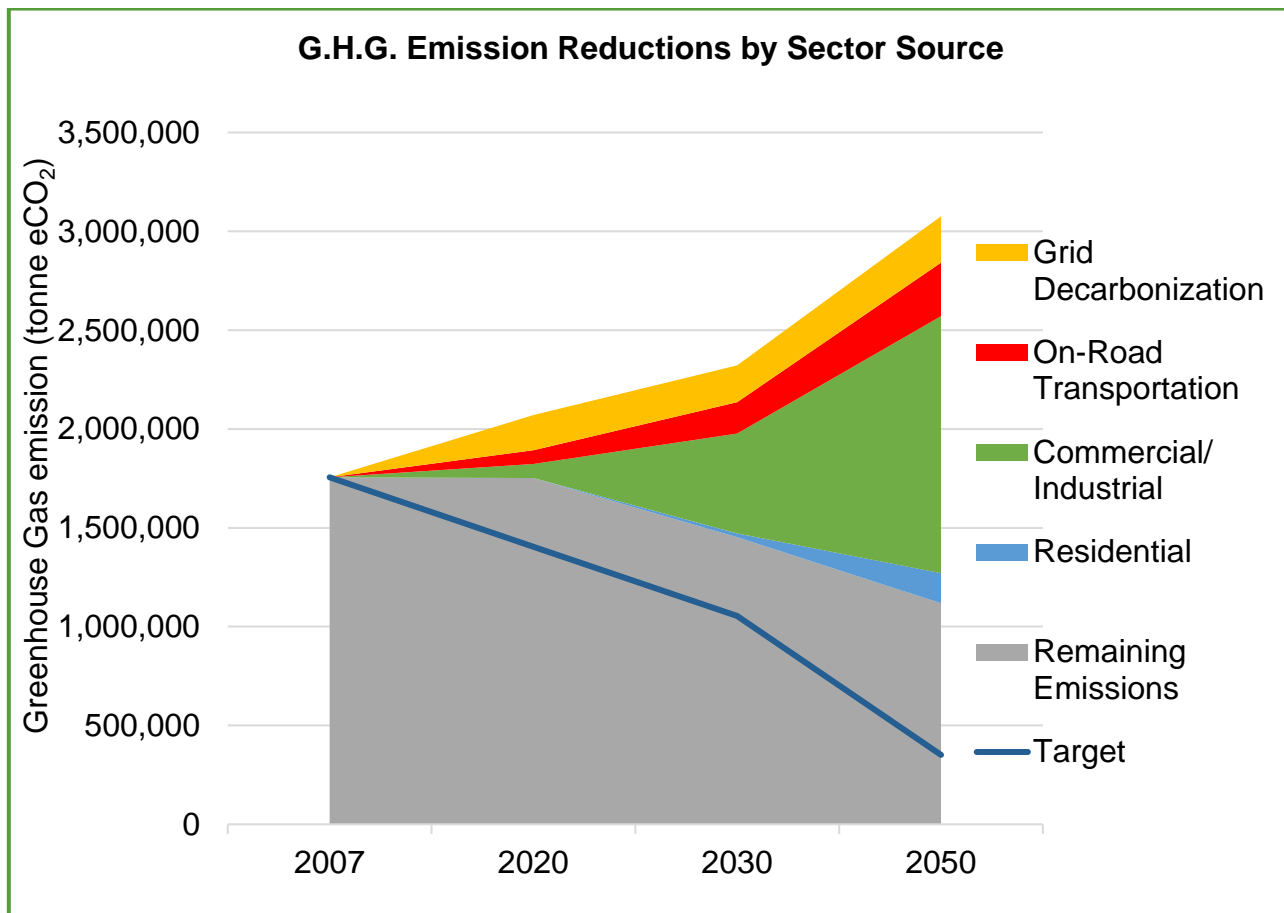


Figure 7: G.H.G. Emission Reductions by Sector Source

The “Business-as-usual” scenario considers current patterns of energy consumption and G.H.G. emissions and extrapolates it to 2050, while accounting for population increases, fuel efficiency standards and the potential future impacts of climate change on infrastructure. On the other hand, the “Reduction Scenario” considers the Actions and Opportunities identified in this Plan and their impact on reducing G.H.G. emissions in Oshawa.

The data analysis using the Milestone 3 Scenario Builder tool showed that if Oshawa were to continue under a Business-as-usual scenario, G.H.G. emissions are estimated to increase 75% by 2050 from 2007 levels. However, under the Reduction Scenario, G.H.G. emissions are estimated to be 66% lower than the Business-as-usual scenario and 37% lower than baseline levels (see Figure 8).

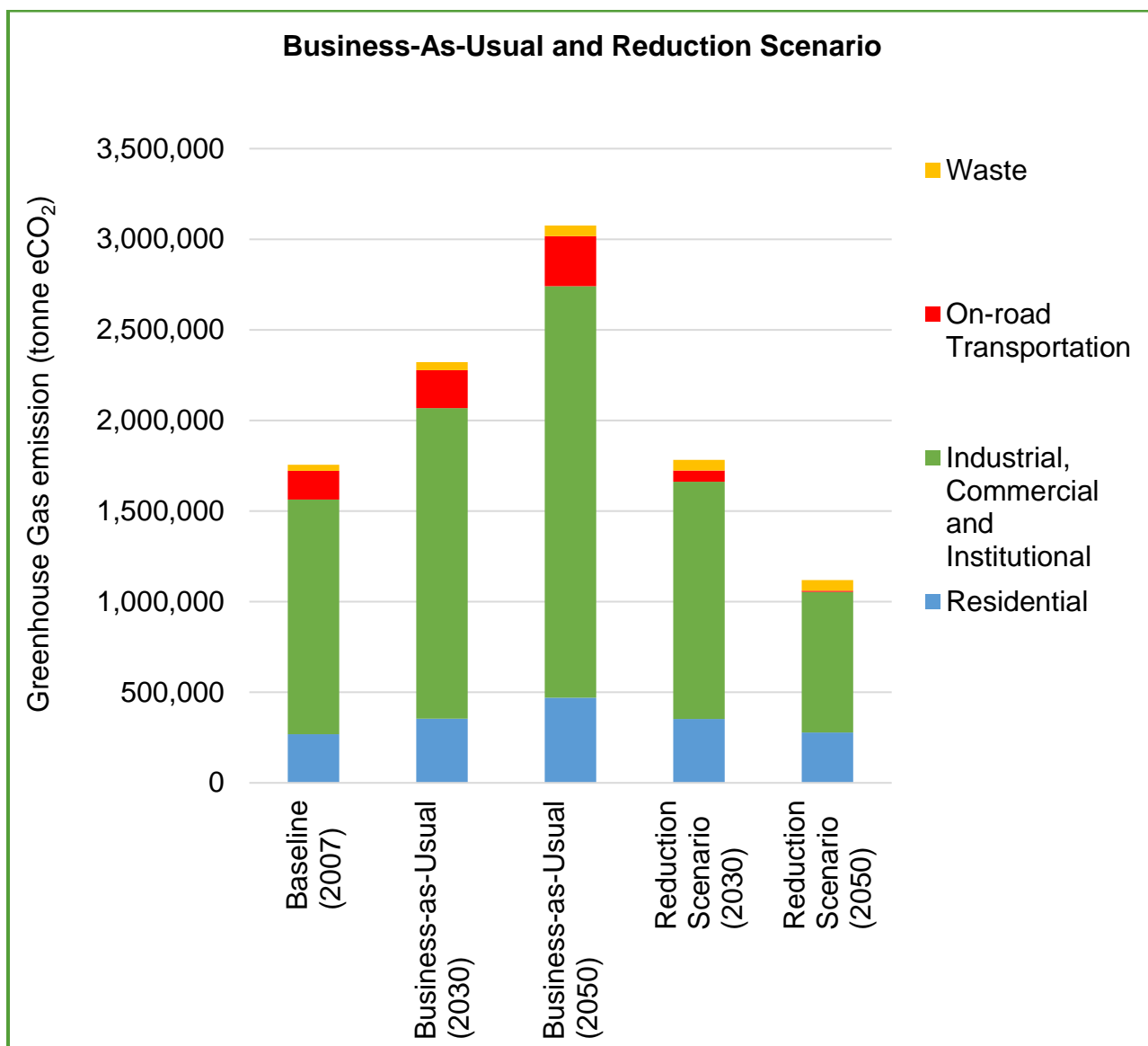


Figure 8: City of Oshawa Business-as-Usual and Reduction Scenario

The G.H.G. emission reductions under the Reduction Scenario do not achieve Oshawa's official target of an 80% reduction in Community G.H.G. emissions by 2050 from the 2007 baseline. Not achieving the target is attributed mainly to the projected population increase in Oshawa. However, it should be noted that the data analysis results from the Scenario Builder tool should be understood as high-level estimates, rather than a forecast of future emissions. Furthermore, the estimate does not account for the following:

- Opportunities identified in the Plan that cannot be accurately quantified (i.e. education programs);
- More efficient technological advances that may be available in the future; and,
- Carbon sequestration initiatives that help reduce G.H.G. emissions (i.e. afforestation, reforestation, etc.).

What impact will this target have?

By 2050, under the Reduction Scenario and implementing the Actions and Opportunities identified in this Plan, will have roughly the same impact as:

- Taking 415,522 vehicles off the road each year;
- Turning off the energy used in 234,356 homes in one year; or
- The work of 32,361,212 ten-year old trees capturing and storing carbon for one year.

What does this mean for me?

This means that each person should reduce their G.H.G. emissions by 4.3 tonnes of eCO₂ to 7.5 tonnes of eCO₂ per year. A reduction of 4.3 tonnes of CO₂ can be achieved by:

- Driving an electric vehicle vs. a gasoline-powered vehicle exclusively;
- Replacing 148 incandescent bulbs with LED bulbs; or,
- Recycling 166 trash bags of mixed recyclables (e.g. paper, metals, plastics, etc.) instead of sending to the landfill.

2.4 A Collaborative Effort

This Plan was developed through a collaborative process that included public and stakeholder input from various sectors across Oshawa. Staff undertook a public consultation process to engage community members and stakeholders on the development of this Plan. The feedback from the consultation was used to inform the Actions and Opportunities in this Plan at various stages.

Internal stakeholders from various departments at the City (i.e. Planning Services, Engineering Services, Operations, Facilities Management Services, Strategic Initiatives, Innovation, etc.), also provided input and direction on the objectives, Actions and Opportunities identified in this Plan.

Collaboration and consultation were fundamental in developing this Plan, as many of the identified Actions and Opportunities require the collaboration of different groups to achieve the City's G.H.G. targets.

The consultation process was comprised of various engagement initiatives that included the use of Connect Oshawa (www.connectoshawa.ca), the City's online engagement platform. In addition, staff specifically engaged and requested comments from the groups identified as Partners in Appendix A and other stakeholders for each Action and Opportunity in the Plan.

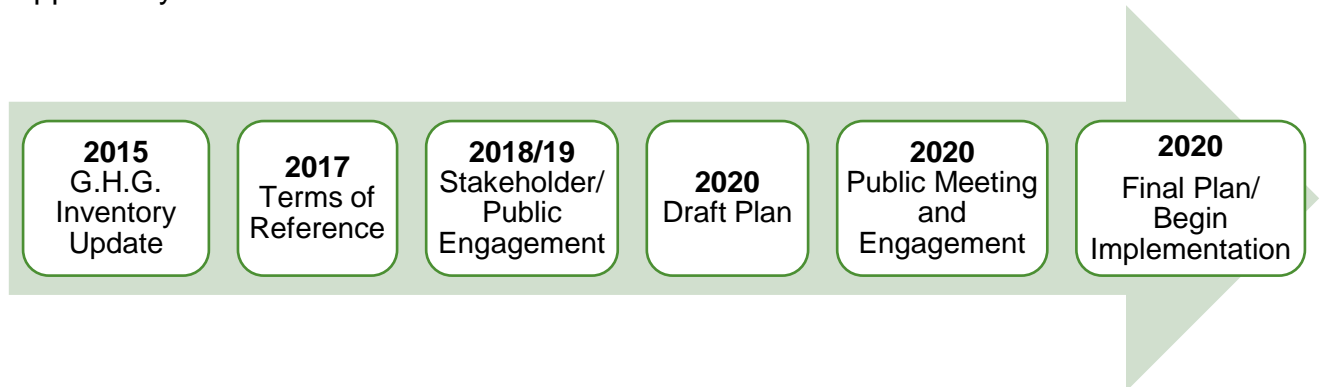


Figure 9: Plan development timeline.

3.0 Framing the Plan

3.1 Alignment with Other Plans, Policies and Initiatives

Goal:

To develop a Community G.H.G. Reduction Plan that is comprehensive, collaborative, community-driven and recognizes existing regional and local climate change and energy conservation initiatives, policies and plans that already provide direction.

This Plan will contribute to meeting regional, provincial and national climate change goals. On December 12, 2015, the Government of Canada signed the Paris Agreement, which aims to strengthen the global response to the threat of climate change by:

- Holding the increase in global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels;
- Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low G.H.G. emission development in a manner that does not threaten food production; and,
- Making finance flows (i.e. investment, trade, spending, etc.) consistent with a pathway towards low G.H.G. emissions and climate resilient development.

Under the Paris Agreement, Canada committed to reducing its G.H.G. emissions by 30% below 2005 levels by 2030. Similarly, the Province of Ontario's Made-in-Ontario Environment Plan commits to reducing G.H.G. emissions in Ontario by 30% below 2005 levels by 2030.

In 2019, Durham Regional Council endorsed the Durham Community Energy Plan (D.C.E.P.) in principle, which aims to reduce G.H.G. emissions across the region by 80% by 2050 from 2007 levels. Oshawa City staff are working with Regional staff and other local partners to implement the following programs identified in the D.C.E.P:

- Durham Green Standard: Enhanced energy performance for new buildings;
- Durham Deep Retrofit: Transforming existing buildings;
- Renewable Energy Co-operative: Stimulating local renewable energy projects;
- Electric Vehicle Joint Venture;
- Education and Outreach Program: Engaging the community; and,
- Coordinating Land-use Policies: Sustainable growth.

City of Oshawa's existing plans, such as the Oshawa Strategic Plan, Our Plan for Success, 2020-2023 (O.S.P.), the Integrated Transportation Master Plan (I.T.M.P.) and the Active Transportation Master Plan (A.T.M.P.), the Corporate Plan and the C.F.E.M.P. will also be supported by this Community G.H.G. Reduction Plan. The O.S.P. includes environmental responsibility as one of the five strategic goals. One of the identified strategies of the O.S.P. is to develop and implement corporate and community plans to

reduce greenhouse gas emissions, improve air quality, and continue to reduce energy use, which will be accomplished through this Plan.

3.2 Plan Objectives

The City of Oshawa has shown leadership in sustainability through various initiatives such as in energy conservation, brownfield development, and supporting the work of the Oshawa Environmental Advisory Committee (O.E.A.C.). The objectives in this Plan will expand upon existing actions from other City plans, strategies and initiatives, and will identify specific Actions and Opportunities that will contribute to G.H.G. emission reductions in our community. The objectives of the Plan are:

- Increase renewable energy use;
- Implement policy that promotes energy efficiency in buildings, land use patterns and transportation; and,
- Promote sustainability through leadership and education.

Many of the Actions and Opportunities described below will impact various sectors (i.e. transportation, residential and commercial), because sustainability is a multidisciplinary issue. Furthermore, the Actions and Opportunities in this Plan are related to existing City and Regional policies and programs.

3.3 Actions at Home

Action 1: Increase Renewable Electricity Generation from Renewable Sources in Residential Buildings.

Renewable forms of energy produce less G.H.G. emissions and can contribute to reducing the urban heat island effect and improving overall air quality. Increasing renewable energy use at home will also help reduce energy costs for home owners and renters.

Increasing electricity generation from renewable energy sources in residential buildings will be advanced by:

- Engaging with Oshawa Power and Utilities Corporation (O.P.U.C.) to explore and identify potential residential renewable electricity generation projects within the City (e.g. solar panels for multi-storey residential buildings, etc.).

Action 1 – Key Metrics:

- Staff will monitor the number of electricity generation projects implemented in the City.

Spotlight on Community Leaders

O.P.U.C., in partnership with the City of Oshawa and New Energy and Industrial Technology Development Organization (N.E.D.O.), a Japanese governmental organization that promotes research in the renewable energy field, successfully piloted one of the first grid-friendly residential solar-plus-storage systems of this scale in North America.

The five year pilot project examined the efficiency and reliability of residential solar energy management systems (S.E.M.S.) in a live setting, while also defining business cases appropriate for the Canadian market. The goal of the S.E.M.S. pilot was to demonstrate and quantify beneficial climate change outcomes, as well as benefits to customers and the utility. The \$1.2 million initiative involved the participation of 30 Oshawa homes, utilizing solar energy, an advanced smart inverter and a lithium-ion battery to simultaneously produce, store and manage energy from their own home.

In 2016, participating homes generated 124.8 MWh of electricity from the solar storage systems, which is equivalent to 642,647 km driven or 2,195 trees planted. Additionally, the systems reduced household G.H.G. emissions by approximately 40 grams of eCO₂/kWh, saving customers up to \$300 per season on their utility bills.

The pilot project concluded in February 2019 and the results of the project are posted on O.P.U.C.'s website at <https://www.opuc.on.ca/solar-energy-management-system/>.

Action 2: Improve Energy Performance in Residential Buildings.

The heating and cooling of residential buildings is one of the largest contributors to G.H.G. emissions in Oshawa. Improving energy performance in residential buildings will help reduce energy costs for home owners and tenants.

Improving energy performance in residential buildings in Oshawa will be advanced by:

- Advertising opportunities for and encouraging Oshawa residents to participate in the **Durham Home Energy Savings Program** offered by the Region of Durham for residential buildings and provide marketing and communication support with the City's suite of social

Action 2 – Key Metrics:

- Staff will monitor the number of Oshawa residents participating in the Durham Home Energy Savings Program, or a similar program.
- Staff will monitor the number of developments that incorporate energy efficient/ climate resilient best practices.

media. In addition, explore opportunities to develop neighbourhood-based engagement opportunities that target areas of Oshawa with high energy savings potential and/or high concentrations of energy poverty;

- Working in partnership with Durham Region and other area municipalities to investigate advancing on a volunteer basis, the Durham Green Standard program identified in the D.C.E.P.; and,
- Exploring opportunities through the development approval process to advance best practices for the development of energy efficient and climate resilient buildings (e.g. white roofs, green roofs, rooftop gardens, solar panels, district energy systems, etc.).

What You Can Do At Home

Certain habits at home can have a large impact on G.H.G. emissions. You can help by:

- Replacing your lightbulbs with LEDs;
- Buying energy efficient appliances and products;
- Tracking your energy usage;
- Unplugging your devices when they're not in use;
- Properly sorting waste, recycling and organic materials; and
- Participating in programs to install renewable energy technology (e.g. solar) on your property.

Resources:

- Durham Home Energy Savings Program – <https://www.durham.ca/en/living-here/durham-community-energy-plan.aspx>
- Energy STAR - <https://www.energystar.gov/>
- O.P.U.C. - <https://www.opuc.on.ca/conservation/conservation-tips/>
- Durham Garbage and Recycling – <https://www.durham.ca/en/living-here/garbage-and-recycling.aspx>

3.4 Actions at Work & School

Action 3: Increase Renewable Electricity generation from renewable sources in I.C.I. buildings.

Renewable forms of energy produce less G.H.G. emissions and can contribute to reducing the urban heat island effect and improving overall air quality. In addition, the diversification of Oshawa's energy supply will reduce dependence on fossil fuels and increase the resilience of our energy sector.

Increasing electricity generation from renewable energy sources in I.C.I. buildings will be advanced by:

- Engaging with O.P.U.C. to explore and identify potential commercial renewable electricity generation projects within the City (e.g. solar panels for I.C.I. buildings, etc.); and,

Action 3 – Key Metrics:

- Staff will monitor the number of electricity generation projects implemented in the City.

Action 4: Improve energy performance in I.C.I. buildings.

The heating and cooling of I.C.I. buildings is one of the largest contributors to G.H.G. emissions in Oshawa. Improving energy performance in commercial buildings will help reduce operating costs for businesses.

Improving energy performance in commercial buildings in Oshawa will be advanced by:

- Exploring opportunities for Oshawa businesses to participate in the Durham Deep Retrofit Program offered by the Region of Durham for commercial buildings;
- Working in partnership with Durham Region to advance, on a voluntary basis, the Durham Green Standard program identified in the D.C.E.P.; and,
- Exploring opportunities through the development approval process to advance best practices for the development of energy efficient and climate resilient commercial buildings (e.g. white roofs, green roofs, rooftop gardens, solar panels, etc.).

Action 4 – Key Metrics:

- Staff will monitor the number of Oshawa businesses participating in the Durham Deep Retrofit Program for commercial buildings, or a similar program.
- Staff will monitor the number of developments that incorporate energy efficient/ climate resilient best practices.

What You Can Do At Work & School

Certain habits at work and school can have a large impact on G.H.G. emissions. You can help by:

- Promoting sustainable procurement policies at work and school;
- Turning your computer off when not in use;
- Printing double-sided;
- Using reusable dishes and cutlery;
- Replacing bottled water with filtered tap water;
- Increasing awareness and education of G.H.G. emissions and impact on global warming and climate change; and,
- Creating your own corporate plan for reducing G.H.G. emissions in line with the City's community G.H.G. emissions reduction targets.

Resources:

- Leadership in Energy and Environmental Design (L.E.E.D.) – <https://new.usgbc.org/leed/>
- BOMA BEST – <http://bomacanada.ca/bomabest/>
- Eco Schools – <https://www.ecoschools.global/>

3.5 Actions on the Move

Action 5: Promote low carbon or no carbon vehicles.

This action focuses on encouraging the use of smaller, more efficient and electric vehicles (E.V.s) that can achieve further reductions in the community's G.H.G. emissions. This program was identified in the D.C.E.P. as a collaborative effort to promote and provide incentives for electric vehicle use.

Promoting low carbon or no carbon personal vehicles in Oshawa will be advanced by:

- Working in partnership with Durham Region to advance the proposed Electric Vehicle Joint Venture program identified in the D.C.E.P.;
- The City, in partnership with O.P.U.C., will continue to explore opportunities to install E.V. chargers throughout the City in private and public settings;
- Exploring the development of policies to support low emissions vehicles – hybrids, plug-in electric, full electric vehicles, electric bikes and scooters (e.g. dedicated parking, vehicle charging stations, solar-powered parking meters, etc.); and,

Action 5 – Key Metrics:

- Staff will monitor the number of publically available E.V. chargers installed in Oshawa, in consultation with O.P.U.C.

- Exploring opportunities to promote or require roughed-in E.V. charging infrastructure in high density residential and commercial developments at the site plan stage.

Action 6: Increase/improve cycling and walking infrastructure to encourage active forms of transportation.

Providing a variety of safe and reliable transportation options will help shift the primary mode of transportation from automobiles to transit, cycling, rideshare and walking, ultimately reducing G.H.G. emissions.

Increasing and improving cycling and walking infrastructure to encourage active forms of transportation in Oshawa will be advanced by:

- Implementing the actions outlined in the City’s I.T.M.P. to support its visions of achieving a balanced, sustainable, multi-modal transportation system in the City of Oshawa. The goals of the I.T.M.P. are to improve mobility, alleviate congestion, and encourage sustainability and multi-modality; and,
- Supporting the steady and strategic implementation of new cycling and pedestrian infrastructure and connectivity in coordination with the Active Transportation Master Plan.

Action 6 – Key Metrics:

- Staff will monitor the implementation of the actions outlined in the City’s I.T.M.P. and A.T.M.P.

Action 7: Coordinate land-use policies to establish a built form that promotes sustainable growth.

The way cities are planned and built has a significant impact on the amount of energy that is consumed at home, at work and school, and on the move. Encouraging more compact, mixed-use development would help reduce the frequency and length of vehicle trips and make other forms of transportation more viable. Considering climate mitigation in land use planning decisions can result in reduced G.H.G. emissions and encourage more sustainable behaviour.

Coordinating land-use policies to establish a built form that promotes sustainable growth in Oshawa will be advanced by:

- Updating City policies, as appropriate and in accordance with the Provincial Growth Plan and Greenbelt Plan as well as the Central Lake Ontario Conservation Authority (C.L.O.C.A.) Watershed Plans.
- Supporting high-density mixed-use development and walkable communities and encouraging intensification in appropriate locations;

Action 7 – Key Metrics:

- Through the City’s Housing Monitoring Report, staff will continue to monitor key housing statistics in Oshawa.

- Supporting further development of the downtown into a highly urban, multi-modal and vibrant destination with a mix of land uses and employment opportunities;
- Protecting existing natural features and systems, in particular treed features and wetlands which contribute to carbon sequestration and explore opportunities to include targeted natural heritage restoration in the development process, where feasible;
- Exploring the longer term transition of underutilized or vacant commercial centres to vibrant, multi-modal, mixed-use areas in appropriate locations throughout the City;
- Investigating planning tools to encourage higher performance buildings, passive design and renewable energy (e.g. streamlining the approval of permits, etc.); and,
- Encouraging, through the Official Plan, home occupation uses in areas designated as residential, in consultation with internet providers (i.e. Bell and Rogers) to provide higher quality fibre powered networks in older neighbourhoods. This will provide more opportunity for Oshawa residents to work from home and help reduce G.H.G. emissions from transportation.

What You Can Do On the Move

How you decide to move from place to place the City can have a large impact on G.H.G. emissions. You can help by:

- Walking, biking or skateboarding to your destination;
- Joining a car share program or carpool with a friend;
- Using public transportation to reduce single-occupancy vehicles on the road;
- Purchasing a vehicle that uses alternative fuels (e.g. E.V.s); and,
- Turning off your car while waiting to reduce idling time.

Resources:

- Durham Region Transit – <https://www.durhamregiontransit.com/en/index.aspx>
- GO Transit – <https://www.go transit.com/en/>
- Ontario Ministry of Transportation – <https://www.ontario.ca/page/ministry-transportation>
- Smart Commute – <https://smartcommute.ca/>

3.6 Additional Opportunities

Opportunity 1: Promote energy efficient business operations.

The City can increase awareness of energy efficiency and G.H.G. emission reduction best practices, in local businesses by providing knowledge and resources.

The City can work with local partners to promote energy efficiency through incentives and various activities (e.g. eco-business networks) to engage and enable the business community to use energy more wisely and therefore reduce operating costs and increase business resiliency.

Promoting energy efficient business operations in Oshawa will be advanced by:

- Encouraging the creation of green jobs during local economic development planning; and,
- Working with utility providers, the Oshawa Chamber of Commerce and the Downtown Business Improvement Area members to engage with local businesses and provide information on available energy savings initiatives, sustainable procurement policies and available renewable energy incentives.

Opportunity 2: Promote sustainable practices through strategic outreach and education.

The City can use its various points of contact to promote and encourage residents and businesses to take action against climate change (i.e. through promotional materials and online communications such as social media and the website).

Promoting sustainable practices through strategic outreach and education will be advanced by:

- Exploring opportunities for strategic outreach and education for:
 - Developers, realtors and other stakeholders to promote energy efficiency, passive design and renewable energy technologies and practices;
 - Property owners and tenants to reduce energy use and invest in renewable on-site energy; and,

Opportunity 1 – Key Metrics:

- Staff will track the number of City-lead engagement opportunities related to the promotion of energy efficient business operations.

Opportunity 2 – Key Metrics:

- Staff will track the number of City-lead outreach and education opportunities related to climate change and sustainability.

- Investigating education and engagement campaigns on climate awareness to emphasize the importance of sustainability.

Opportunity 3: Strengthen the City’s capacity to be a leader in sustainability and implement the actions in this Plan.

The Oshawa Strategic Plan identifies environmental responsibility as a strategic goal, including the following themes:

- Proactive environmental management and combat climate change;
- Cleaner air, land and water;
- Resilient local food system; and,
- Less waste generation.

Opportunity 3 – Key Metrics:

- Staff will monitor and track reforestation/ afforestation projects in rural areas in Oshawa.

The City can explore ways to demonstrate its commitment to environmental responsibility and be a leader in reducing G.H.G. emissions.

Strengthening the City’s capacity to be a leader in sustainability and implement the actions in this Plan will be advanced by:

- Exploring opportunities to develop a climate lens in decision making that will integrate climate change considerations into the planning and development of staff and Council decisions by considering the environmental impacts, G.H.G. emissions and climate resilience of projects;
- Exploring opportunities to encourage tree-planting initiatives both on City-owned and privately-owned land; and,
- Exploring opportunities to partner with C.L.O.C.A. to support reforestation/ afforestation projects in rural areas.

3.7. Summary of Actions and Opportunities

Actions and Opportunities	Environmental Benefits			Existing Related Plans
	G.H.G. Avoidance Potential at 2030 ¹	G.H.G. Avoidance Potential at 2050 ¹	Other Benefits	
Actions at Home				
Action 1: Increase renewable electricity generation from renewable sources in residential buildings	1,882 ²	4,741 ²	<ul style="list-style-type: none"> ▪ Improve energy resilience ▪ Reduce energy costs ▪ Improved air quality ▪ Reduce Urban Heat Island 	<ul style="list-style-type: none"> ▪ D.C.E.P.
Action 2: Improve energy performance in residential buildings	20,213 ³	151,810 ³	<ul style="list-style-type: none"> ▪ Reduce home energy costs ▪ Improve climate resiliency ▪ Increase home values ▪ Improved air quality ▪ Reduce Urban Heat Island 	<ul style="list-style-type: none"> ▪ D.C.E.P.
Actions At Work and School				
Action 3: Increase renewable electricity generation from renewable sources in commercial buildings	1,090 ⁴	3,431 ⁴	<ul style="list-style-type: none"> ▪ Improve energy resilience ▪ Reduce energy costs ▪ Improved air quality ▪ Reduce Urban Heat Island 	<ul style="list-style-type: none"> ▪ D.C.E.P.
Action 4: Improve energy performance in commercial buildings	505,267 ⁵	1,300,928 ⁵	<ul style="list-style-type: none"> ▪ Reduce operational costs of commercial buildings ▪ Improve climate resiliency ▪ Improved air quality ▪ Reduce Urban Heat Island 	<ul style="list-style-type: none"> ▪ D.C.E.P.

Actions and Opportunities	Environmental Benefits			Existing Related Plans
	G.H.G. Avoidance Potential at 2030 ¹	G.H.G. Avoidance Potential at 2050 ¹	Other Benefits	
Actions On the Move				
Action 5: Promote low carbon or no carbon vehicles	103,853 ⁶	235,772 ⁶	<ul style="list-style-type: none"> ▪ Improved air quality ▪ Reduce travel costs ▪ Reduce Urban Heat Island 	<ul style="list-style-type: none"> ▪ D.C.E.P.
Action 6: Increase/Improve cycling and walking infrastructure to encourage active forms of transportation	28,913 ⁷	14,017 ⁷	<ul style="list-style-type: none"> ▪ Improved air quality ▪ Increased physical activity ▪ Reduced travel costs 	<ul style="list-style-type: none"> ▪ I.T.M.P. ▪ A.T.M.P.
Action 7: Coordinate land-use policies to establish a built form that promotes sustainable growth	26,254 ⁸	20,507 ⁸	<ul style="list-style-type: none"> ▪ Improved air quality ▪ More efficient use of land ▪ Increased physical activity ▪ Shorter commute times ▪ Local economic development 	<ul style="list-style-type: none"> ▪ Oshawa Official Plan ▪ I.T.M.P. ▪ A.T.M.P. ▪ C.L.O.C.A. Watershed Plans ▪ Ecological Services: Valuing Natural Assets Within C.L.O.C.A.
Additional Opportunities				
Opportunity 1: Promote energy efficient business operations	Not Quantified ⁹	Not Quantified ⁹	<ul style="list-style-type: none"> ▪ Energy and water conservation ▪ Reduce business operating costs ▪ Improved corporate image 	<ul style="list-style-type: none"> ▪ D.C.E.P.

Actions and Opportunities	Environmental Benefits			Existing Related Plans
	G.H.G. Avoidance Potential at 2030 ¹	G.H.G. Avoidance Potential at 2050 ¹	Other Benefits	
Opportunity 2: Promote sustainable practices through strategic outreach and education	Not Quantified ⁹	Not Quantified ⁹	<ul style="list-style-type: none"> ▪ Increased education/awareness of environmental issues ▪ Increased civic engagement on environmental issues 	<ul style="list-style-type: none"> ▪ D.C.E.P.
Opportunity 3: Strengthen the City's capacity to be a leader in sustainability and implement the actions in this Plan	Not Quantified ⁹	Not Quantified ⁹	<ul style="list-style-type: none"> ▪ Increased education/awareness of environmental issues ▪ Increased civic engagement on environmental issues 	<ul style="list-style-type: none"> ▪ O.S.P.

Section 3.7 Notes:

¹ The 2007 and 2020 electricity coefficients were sourced from Oshawa's 2007 G.H.G. Emission Inventory and 2019 National Measures Report respectively. For 2030 and 2050, the grid intensity was projected based on Demand Outlook B of the Ontario Planning Outlook from Independent Electricity System Operator (I.E.S.O.) (<http://www.ieso.ca/sector-participants/planning-and-forecasting/ontario-planning-outlook>).

² Assumes a Photovoltaic (P.V.) factor of 1064 kWh/kW based on the NRCan Solar Resources Tables (<https://www.nrcan.gc.ca/18366>). Assumes that by 2050, 80% of the residential buildings that have solar P.V. systems can provide 30% of the buildings electricity consumption.

³ Assumes that by 2050, new construction of residential buildings will be 90% more energy efficient than those built in 2007, and that 50% of existing residential buildings will be retrofitted to achieve 50% energy savings by 2050. The D.C.E.P. cites an internal analysis by the Toronto Atmospheric Fund (T.A.F.) which assumed that the Ontario Building Code (O.B.C.) would be equivalent to the Toronto Green Standard (T.G.S.) v2 Tier 1 by 2017, and that the O.B.C. will follow the evolution of the T.G.S. with a five year lag. Thus the modelling of all new construction assumes a 15% improvement every five years.

⁴ Assumes a P.V. factor of 1064 kWh/kW based on the NRCan Solar Resources Tables (<https://www.nrcan.gc.ca/18366>). Assumes that by 2050, a total of 73,050 kW of stationary solar energy will be installed by 2050.

⁵ Assumes that by 2050, new construction of commercial buildings will be 90% more energy efficient than those built in 2007, and that 50% of existing commercial buildings will

be retrofitted to achieve 50% energy savings by 2030 and 80% by 2050. The D.C.E.P. cites an internal analysis by the Toronto Atmospheric Fund (T.A.F.) which assumed that the Ontario Building Code (O.B.C.) would be equivalent to the Toronto Green Standard (T.G.S.) v2 Tier 1 by 2017, and that the O.B.C. will follow the evolution of the T.G.S. with a five year lag. Thus the modelling of all new construction assumes a 15% improvement every five years.

⁶ The Government of Ontario's Long Term Energy Plan projects that Ontario will have one million electric vehicles by 2035 (<https://www.ontario.ca/page/ontarios-long-term-energy-plan>). Assumes that personal electric vehicles use will increase incrementally from 2020 and that by 2050, 50% of new personal use vehicle stock will be no carbon or low carbon vehicles.

⁷ Assumes that personal vehicles will be used for 50% of all on-road transportation trips by 2030 and 25% by 2050. Other forms of on-road transportation (i.e. passenger, walking, biking, public transportation, etc.) are expected to increase incrementally beginning in 2020.

⁸ Assumes that the average kilometre travelled by gasoline-powered vehicles per person will decrease 25% by 2030 and 50% by 2050 due to the coordination of land-use policies to establish a built form that promotes sustainable growth and multi-modal communities.

⁹ Indicates Opportunities that have not been quantified in tonne eCO₂ for the purposes of this Plan, but would still present opportunities for reducing G.H.G. emissions, and thereby result in a positive impact on the environment.

4.0 Next Steps: Implementing the Plan

4.1 Roles and Responsibilities

Implementing the Actions and Opportunities identified in this Plan will require the effort and collaboration of many members of the Oshawa community. The City's role is to guide the development and implementation of this Plan, reduce barriers, and coordinate efforts to bring this Plan into fruition. This role can be fulfilled through the existing resources at the City.

4.2 Implementation of the Plan

This Plan provides a foundation for future efforts to reduce energy use and greenhouse gas emissions in Oshawa.

Milestone 4 of the P.C.P. Program requires participating municipalities to consider how the local action plan will be implemented, how the Plan will be integrated into existing plans and policies and how implementation will be scheduled to ensure ongoing support from Council and stakeholders.

The Actions and Opportunities contained in this Plan will be implemented on a case by case basis, subject to available funding and Council-approval. Once the City has begun to implement one or more of the Actions and Opportunities identified in this Plan, staff will submit the appropriate documentation to F.C.M. to satisfy the Milestone 4 requirement for the community action plan under the P.C.P. Program.

Upon Council adoption and F.C.M. approval of this Plan, staff will work with Corporate Communications to announce and distribute the Plan (e.g. through a media release, the City's suite of social media, etc.). Staff will also continue to update the City's Climate Change website, as appropriate.

4.3 Resources and Funding

Ongoing resources and funding are required for the continued implementation of this Plan, and leveraging existing initiatives and resources will be imperative. The City of Oshawa should continue to find ways to leverage existing resources to ensure the Actions and Opportunities identified in this Plan can be implemented effectively.

The City of Oshawa will provide oversight for the implementation of this Plan, including regular monitoring and reporting of progress and coordinating with partners.

The City may wish to establish a community project fund to support the implementation of the actions identified in this Plan. Community members or organizations may apply for a portion of the fund and demonstrate how their project(s) supports this Plan.

The City of Oshawa, in partnership with its strategic partners, will actively seek funding opportunities to help implement the actions outlined in this Plan.

4.4 Ongoing Tracking and Monitoring

An important part of this Plan is to monitor, measure and report on Oshawa's progress. It is recommended that the City undertake a new G.H.G. emissions inventory upon the Council-adoption and F.C.M. approval of this Plan and every five (5) years thereafter to monitor the progress of its G.H.G. emission reduction targets (i.e., reduce emissions 80% by 2050 from 2007 levels).

In addition, staff will monitor the progress of the Key Metrics summarized in Appendix B, every five (5) years and inform Council by way of an Information Report.

The City will also continue to monitor new technology and developments related to G.H.G. emission reductions and will take advantage of new opportunities as appropriate.

Appendix A: G.H.G. Avoidance Actions and Opportunities

Action/ Opportunity	Partners		G.H.G. Avoidance Potential (t eCO ₂) ¹		Financial ²		Status and Timing	Public Acceptance ³
	Lead Partner(s)	Collaborators	At 2030	At 2050	Estimated Cost	City Investment to Date		
Actions At Home								
Action 1: Increase electricity generation from renewable sources in residential buildings	<ul style="list-style-type: none"> ▪ Durham Region ▪ Oshawa Power 	<ul style="list-style-type: none"> ▪ City of Oshawa ▪ Durham Area Municipalities 	1,882	4,741	\$\$\$\$\$	In-kind support	O.P.U.C. utility programs ongoing.	90.9%
Action 2: Improve energy performance in residential buildings	<ul style="list-style-type: none"> ▪ Durham Region ▪ Oshawa Power 	<ul style="list-style-type: none"> ▪ Durham Area Municipalities ▪ Building Industry and Stakeholders ▪ Durham Home Builders Association ▪ Building Industry Liaison Team (B.I.L.T.) 	20,213	151,810	\$\$\$\$	In-kind support	O.P.U.C. utility programs ongoing. Durham Home Energy Savings Program underway.	95.5%

Action/ Opportunity	Partners		G.H.G. Avoidance Potential (t eCO ₂) ¹		Financial ²		Status and Timing	Public Acceptance ³
	Lead Partner(s)	Collaborators	At 2030	At 2050	Estimated Cost	City Investment to Date		
Actions At Work and School								
Action 3: Increase renewable electricity generation from renewable sources in commercial buildings	<ul style="list-style-type: none"> ▪ Durham Region ▪ Oshawa Power 	<ul style="list-style-type: none"> ▪ City of Oshawa ▪ Durham Area Municipalities 	1,090	3,431	\$\$\$\$\$	In-kind support	O.P.U.C. utility programs and Durham Region programs are ongoing.	81.8%
Action 4: Improve energy performance in commercial buildings	<ul style="list-style-type: none"> ▪ Durham Region ▪ Oshawa Power 	<ul style="list-style-type: none"> ▪ Durham Region ▪ Durham Area Municipalities ▪ Building Industry and Stakeholders ▪ Durham Home Builders Association ▪ Building Industry Liaison Team (B.I.L.T.) 	505,267	1,300,928	\$\$\$\$\$	In-kind support	O.P.U.C. utility programs and Durham Region programs are ongoing.	83.3%

Action/ Opportunity	Partners		G.H.G. Avoidance Potential (t eCO ₂) ¹		Financial ²		Status and Timing	Public Acceptance ³
	Lead Partner(s)	Collaborators	At 2030	At 2050	Estimated Cost	City Investment to Date		
Actions On the Move								
Action 5: Promote low carbon or no carbon vehicles	<ul style="list-style-type: none"> ▪ Durham Region ▪ Oshawa Power 	<ul style="list-style-type: none"> ▪ City of Oshawa ▪ Durham Area Municipalities 	103,853	235,772	\$\$\$\$	In-kind support	E.V. Joint Venture program under the D.C.E.P.is underway.	77.3%
Action 6: Increase/improve cycling and walking infrastructure to encourage active forms of transportation	<ul style="list-style-type: none"> ▪ City of Oshawa 	<ul style="list-style-type: none"> ▪ Durham Region Transportation ▪ Metrolinx ▪ O.A.T.A.C. 	28,913	14,017	Advanced through the O.P., Part II Plans, the I.T.M.P. and A.T.M.P.	Approximately \$200,000 to develop the I.T.M.P. and A.T.M.P. Staff time to develop O.P. amendments.	Implementation of I.T.M.P. and A.T.M.P. is underway.	90.5%
Action 7: Coordinate land-use policies to establish a built form that promotes sustainable growth	<ul style="list-style-type: none"> ▪ City of Oshawa 	<ul style="list-style-type: none"> ▪ Durham Region ▪ Durham Area Municipalities ▪ Oshawa Power ▪ O.A.T.A.C. ▪ O.E.A.C. 	26,254	20,507	Advanced through the O.P., Part II Plans, the I.T.M.P. and A.T.M.P.	Approximately \$200,000 to develop the I.T.M.P. and A.T.M.P. Staff time to develop O.P. amendments.	Policies integrated into O.P. and implementation is underway.	90.9%

Action/ Opportunity	Partners		G.H.G. Avoidance Potential (t eCO ₂) ¹		Financial ²		Status and Timing	Public Acceptance ³
	Lead Partner(s)	Collaborators	At 2030	At 2050	Estimated Cost	City Investment to Date		
Opportunities								
Opportunity 1: Promote energy efficient business operations	<ul style="list-style-type: none"> ▪ City of Oshawa 	<ul style="list-style-type: none"> ▪ Business Improve Area ▪ Durham Home Builders Association ▪ Oshawa Power ▪ O.E.A.C. ▪ B.I.L.T. 	Not Quantified ⁴	Not Quantified ⁴	\$ ⁵	N/A	Explore feasibility in 2021.	81.0%
Opportunity 2: Promote sustainable practices through strategic outreach and education	<ul style="list-style-type: none"> ▪ City of Oshawa 	<ul style="list-style-type: none"> ▪ O.E.A.C. 	Not Quantified ⁴	Not Quantified ⁴	\$ ⁵	In-kind support	Education/ awareness campaigns are ongoing.	75.0%
Opportunity 3: Strengthen the City's capacity to be a leader in sustainability and implement the actions in this Plan	<ul style="list-style-type: none"> ▪ City of Oshawa 	<ul style="list-style-type: none"> ▪ Durham Region ▪ Durham Area Municipalities ▪ O.E.A.C. 	Not Quantified ⁴	Not Quantified ⁴	\$ ⁵	N/A	Explore feasibility in 2021.	77.3%

Appendix A Notes:

¹ For all notes related to G.H.G. Avoidance Potential, please refer to Section 3.7 of this Plan.

² Estimated cost data provided by the City of Oshawa and other contributing partners is based on investments made or budgeted for to date and is subject to change. Given that certain financial information is confidential, the following legend represents the estimated cost of implementation.

Cost Legend:

\$ = <\$100,000

\$\$ = \$100,000 to 500,000

\$\$\$ = \$500,000 to 1 million (M)

\$\$\$\$ = \$1M to 5M

\$\$\$\$\$ = >\$5M

³ Through the online feedback form that was posted on the Connect Oshawa website, respondents were asked several questions about the Draft Plan. The percentage value indicates the percentage of respondents that responded “yes”, when asked if they generally support each action and opportunity. There were 22 respondents to the online feedback form. Percentages vary from row to row since not every respondent answered every question.

⁴ Indicates Opportunities that have not been quantified in tonne eCO₂ for the purposes of this Plan, but would still present opportunities for reducing G.H.G. emissions, and thereby result in a positive impact on the environment.

⁵ Indicates Opportunities that relate to education, outreach and promotion opportunities and may be advanced through the City’s annual operating budget.

Appendix B: Summary of Key Metrics

Key Metric	2020 Status	Source
Action 1: Increase renewable electricity generation from renewable sources in residential buildings		
Number of residential renewable electricity generation projects installed.	TBD	<ul style="list-style-type: none"> ▪ Oshawa Power
Action 2: Improve energy performance in residential buildings		
Number of Oshawa residents participating in the Durham Home Energy Savings Program, or a similar program.	TBD	<ul style="list-style-type: none"> ▪ Durham Region ▪ Oshawa Power
Number of residential developments that incorporate energy efficient/ climate resilient best practices.	TBD	<ul style="list-style-type: none"> ▪ City of Oshawa – Planning Services
Action 3: Increase renewable electricity generation from renewable sources in commercial buildings		
Number of I.C.I. electricity generation projects installed.	TBD	<ul style="list-style-type: none"> ▪ Oshawa Power
Action 4: Improve energy performance in commercial buildings		
Number of Oshawa businesses participating in the Durham Deep Retrofit Program for commercial buildings.	TBD	<ul style="list-style-type: none"> ▪ Durham Region
Number of I.C.I. developments that incorporate energy efficient/ climate resilient best practices.	TBD	<ul style="list-style-type: none"> ▪ City of Oshawa – Planning Services
Action 5: Promote low carbon or no carbon vehicles		
Number of publically available E.V. chargers installed in Oshawa.	TBD	<ul style="list-style-type: none"> ▪ Oshawa Power

Key Metric	2020 Status	Source
Action 6: Increase/Improve cycling and walking infrastructure to encourage active forms of transportation		
Implementation of the actions outlined in the City's I.T.M.P.	Ongoing	<ul style="list-style-type: none"> ▪ City of Oshawa – Engineering Services
Implementation of the actions outlined in the City's A.T.M.P.	Ongoing	<ul style="list-style-type: none"> ▪ City of Oshawa – Engineering Services
Action 7: Coordinate land-use policies to establish a built form that promotes sustainable growth		
Through the Housing Monitoring Report, staff will continue to monitor key housing statistics in Oshawa.	TBD	<ul style="list-style-type: none"> ▪ City of Oshawa – Planning Services
Opportunity 1: Promote energy efficient business operations		
Staff will track the number of City-lead engagement opportunities related to the promotion of energy efficient business operations.	TBD	<ul style="list-style-type: none"> ▪ City of Oshawa – Economic Development Services
Opportunity 2: Promote sustainable practices through strategic outreach and education		
Staff will track the number of City-lead outreach and education opportunities related to the climate change and sustainability.	TBD	<ul style="list-style-type: none"> ▪ City of Oshawa – various departments
Opportunity 3: Strengthen the City's capacity to be a leader in sustainability and implement the actions in this Plan		
Staff will monitor and track reforestation/ afforestation projects in rural areas in Oshawa.	TBD	<ul style="list-style-type: none"> ▪ C.L.O.C.A.