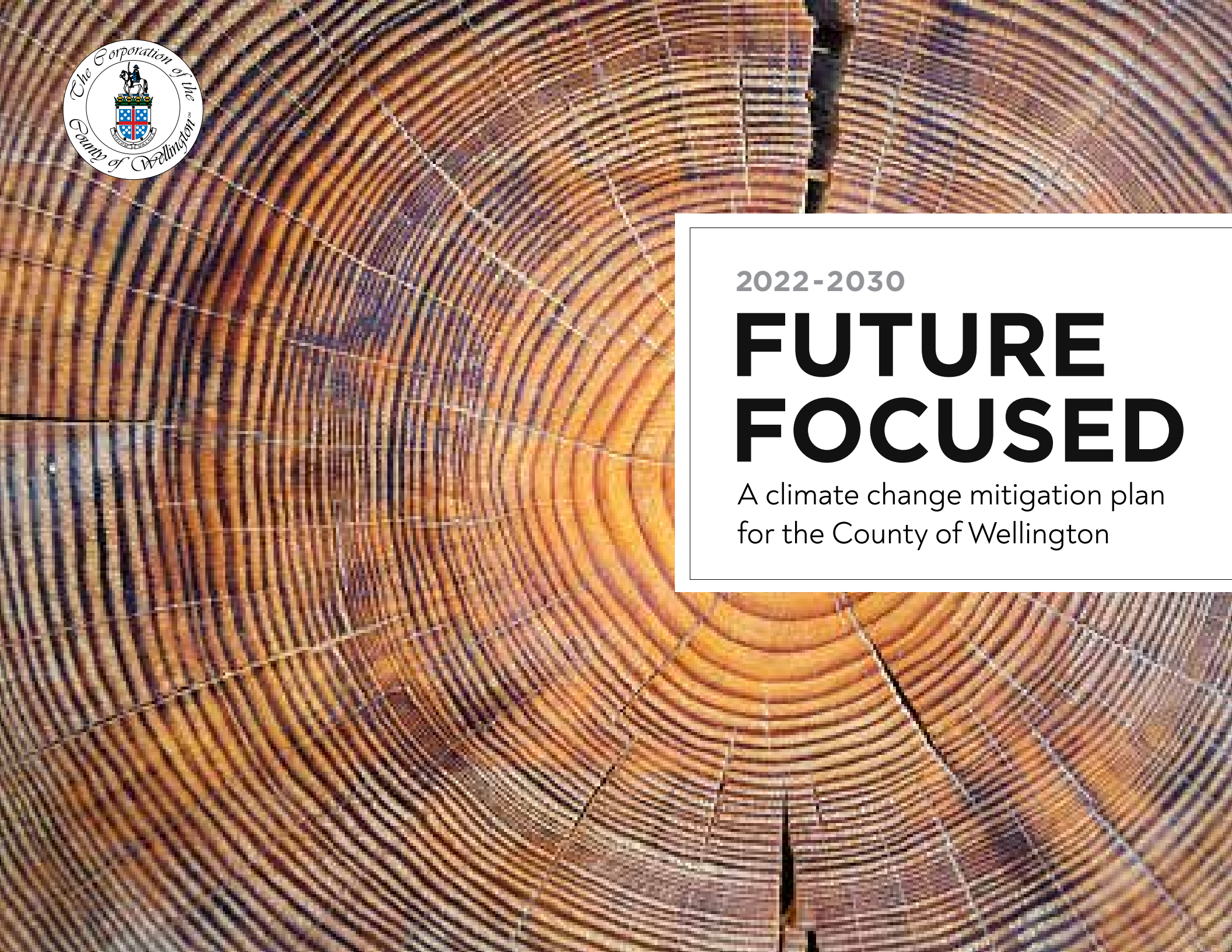


2022-2030

FUTURE FOCUSED

A climate change mitigation plan for the County of Wellington

Wellington County is truly a place where we can live, work and play.

As a community we have tackled big issues, together. We have committed to conserving our natural heritage by supporting programmes such as the Green Legacy Tree Planting Programme and Rural Water Quality Programme, empowered businesses through programmes like the Community Improvement Plan and Emergency Business Sustainability Fund, and supported the community through delivering essential social services such as Ontario Works and Social Housing; among others. Climate Change is one issue we have faced – and continue to face.

Future Focused – A Climate Change Mitigation Plan for the County of Wellington, lays out a pathway to a more sustainable future by empowering our community to act on climate change now. We have the unique opportunity to lead climate action for rural communities through made-in-Wellington solutions that demonstrate the best of what we have to offer; innovation, collaboration and passion. Let's get started – together.

Kelly Linton

The Warden | The County of Wellinton

Acknowledgements

The preparation of this plan was carried out with assistance from the Government of Canada and the Federation of Canadian Muncipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

FCM FEDERATION OF CANADIAN MUNICIPALITIES FÉDÉRATION CANADIENNE DES MUNICIPALITÉS

Our Climate Future

The changes in climate we are seeing today are a result of greenhouse gases (GHG) that have accumulated in the atmosphere for more than a century. So too will the effect of greenhouse gases emitted today be experienced over the proceeding century.

Greenhouse gases can be managed by reducing use of greenhouse gas supply (e.g. fossil fuels) and removing greenhouse gases from the atmosphere (i.e. sequestration). This plan presents recommendations to both reduce and remove greenhouse gases from the atmosphere.

It is projected that the County of Wellington will experience the following changes in climate over the next 80 years:

- **Increase in average annual temperature.**
- **Increase in number of days annually above 30°C.**
- **Increase in average annual precipitation.**
- **Shorter return period of extreme events.**
- **Increase in storm intensity.**
- **Decrease in snow.**
- **Increase in ice storms.**

Resulting in the following potential impacts:

- Road washout and erosion.
- Increased erosion.
- Increased cost of insurance.
- Higher operating costs for ice rinks.
- Power outages and service disruption.
- Road closures.
- Expanded range of invasive and non-native pests.
- Increase in nutrients and sediment in waterways.
- Watermain breaks.
- Increase in algae.
- Lower crop yield.
- Low water during summer drought.
- Decreased opportunity for outdoor skating, skiing, ice-fishing.
- Ice damage to trees.

Mitigation

This plan focuses on climate change mitigation—the reduction of greenhouse gas emissions. The benefits of mitigating greenhouse gas emissions go beyond reducing the magnitude and rate of climate change.

Health and Wellness

Improving air quality and access to nutritious local food.

Affordability and Accessibility

Addressing barriers to home efficiency improvement to lower energy bills.

Economic Development

Increasing opportunity for job growth related to home energy efficiency retrofits and opportunities for new business ventures.

Local Environment

Improving the resilience and sustainability of local natural systems through tree planting, restoration and impact abatement.

Through this plan, **the County of Wellington strives to integrate climate change into our decision-making by developing actions and policy to lead the community in the reduction of greenhouse gas emissions.** This will ensure the County of Wellington continues to deliver superior public service resulting in healthy and safe communities within resilient and sustainable ecosystems, now and in the future.

Municipalities are keenly positioned to play a pivotal role in greenhouse gas reductions as energy consumers, investors and influencers. In 2009, it was estimated that 44% of Canada's greenhouse gas emissions were directly or indirectly controlled by municipalities.

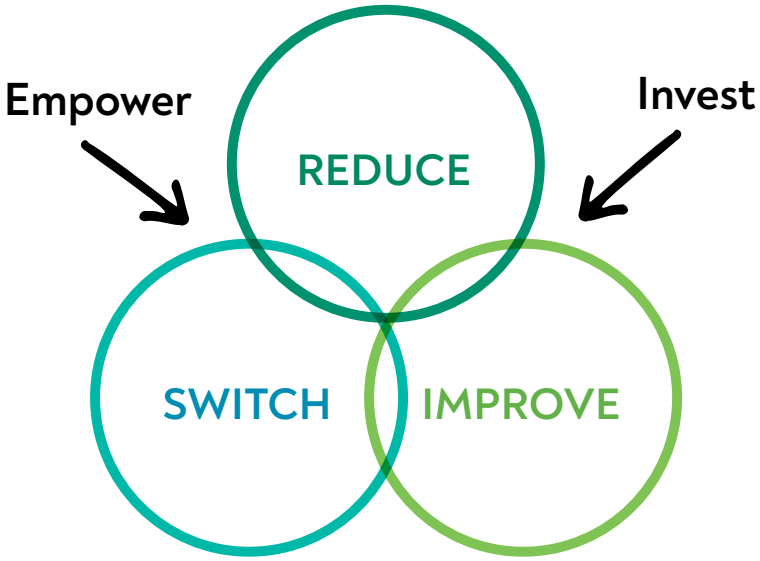
Our Process

The development of this plan followed the Partners for Climate Protection (PCP) Milestone Framework. **The first three steps:** emissions inventory and forecast, target setting, local action plan have been completed (Figure 1).

Figure 1: Partners in Climate Protection Milestone Framework.

The contents of this plan were developed through engagement with County staff, municipal partners, community representatives, local industry contributors and the broader community. The County appreciates the time these contributors dedicated to this project, their willingness to share their expertise and their thoughtful feedback.

Generally, development of the recommended actions in this plan considered the following framework, where the first three categories (reduce, improve, switch) drive emissions reductions and the latter two categories (invest, empower) drive implementation of the plan.



Reduce: Decreasing energy consumption.

Improve: Refine or upgrade efficiency of equipment.

Switch: Replace energy source to lower carbon or renewable energy sources.

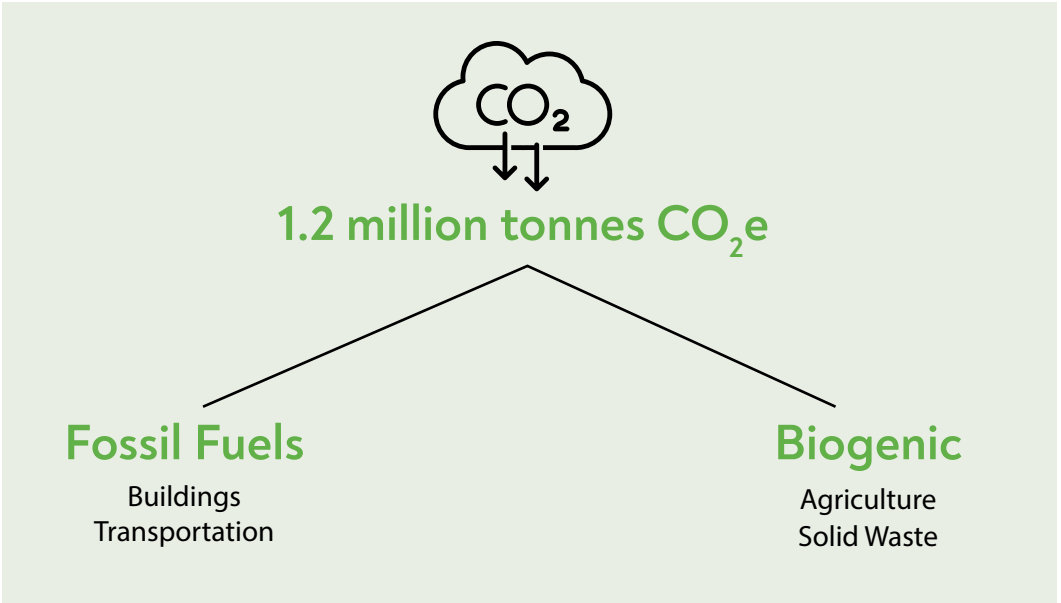
Invest: Allocate funds or resources to incentivize or enable action.

Empower: Equip the community with knowledge to make informed decisions.

A CLOSER LOOK **Emissions of primary focus in this Plan are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_20). In order to understand the relative influence of these greenhouse gas emissions in the atmosphere they are converted to CO_2e (carbon dioxide equivalent) using global warming potential (GWP) factors that compare the potential of each greenhouse gas to trap heat in the atmosphere relative to carbon dioxide. Hence, carbon dioxide has a GWP equal to 1, methane has 25 times the potential as carbon dioxide and nitrous oxide has 298 times the potential on a 100-year time horizon. Emissions values in this plan are presented in tonnes of carbon dioxide equivalent (t CO_2e).**

Community Emissions

Community greenhouse gas emissions have been categorized by their supply; fossil fuels and biogenic (from living organisms). Burning of fossil fuels releases carbon dioxide and other greenhouse gases that were trapped in the earth for millions of years. Biogenic sources emit carbon dioxide that is already part of the natural carbon cycle. In total, Community greenhouse gas emissions in 2017 averaged 12.7 tonnes per capita for the County of Wellington. This is slightly above the provincial average of 12.6 tonnes per capita in 2013.



12.7 TONNES PER CAPITA

Average total Community greenhouse gas emissions in 2017 for the County of Wellington.

Emissions from

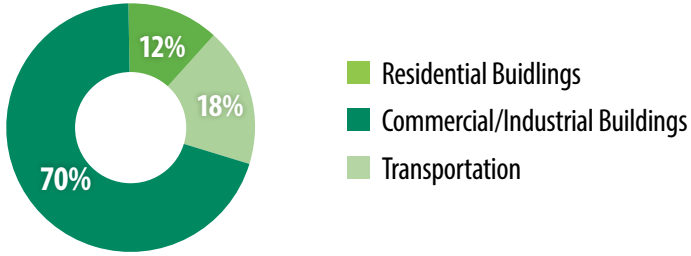
Fossil Fuel Sources

Emissions from fossil fuels are found in

- Buildings: electricity, natural gas, propane, fuel oil.
- Transportation: gasoline, diesel.

Transportation accounts for the largest portion (70%) of greenhouse gas emissions from fossil fuels in the community (Figure 2). This is reflected in the combined emissions contribution from diesel and gasoline sources of 70% of Community emissions (Figure 2). Gasoline is the largest single source contributor at 44% of Community emissions from fossil fuels.

Sector Emissions



Source Emissions

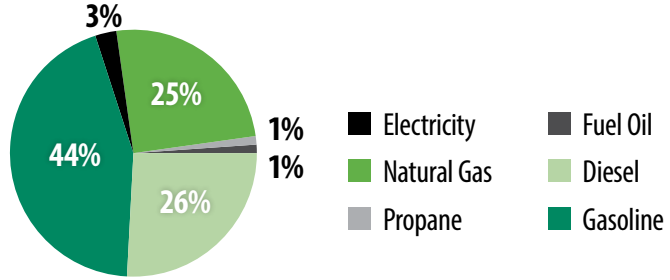


Figure 2: Community greenhouse gas emissions from fossil fuels by sub-sector and source.

Emissions from

Biogenic Sources

Biogenic sources of emissions in the County are from:

- Agriculture: enteric fermentation, manure management, soil management, liming/urea application.
- Solid waste.

Farmers in the County of Wellington feed Ontarians. Food production, both crops and livestock, have a heavy greenhouse gas cost that is borne by farmers.

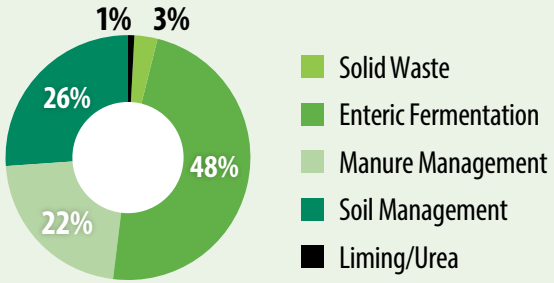
Greenhouse gas inventory calculations for agriculture are complex. Data to implement international protocols are incomplete on a local scale. Assumptions based on the advice of leading local practitioners and academics provide a best approximation of local agriculture emissions.

Agriculture is the only sector in the scope of this project that also sequesters, or traps, carbon in soils and natural areas managed by farmers, which creates the ability to reduce net greenhouse gas emissions.

Sequestration has not been included in the agriculture emissions calculations.

The largest share of Community biogenic-generated emissions is from enteric fermentation (48%) followed by soil management (26%) and manure management (22%) (Figure 3). Biogenic methane is the largest emission from biogenic sources. Biogenic methane is produced by both agricultural processes and solid waste.

Agriculture and Solid Waste Emissions



Biogenic Greenhouse Gases

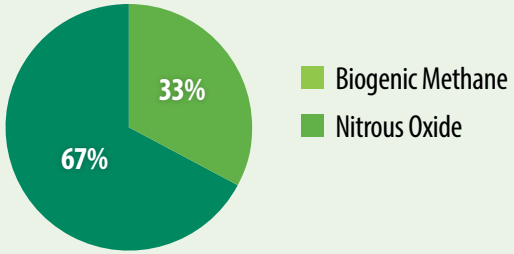


Figure 3: Community greenhouse gas emissions from biogenic supply (Agriculture and Solid Waste) by sub-sector and greenhouse gas.

If we do nothing...

The County of Wellington Official Plan projects the County population will grow to 140,000 people, and employment to grow to 61,000 jobs by 2041. It is estimated that Community greenhouse gas emissions will increase to 1,249,000 CO_2e (Figures 4) by 2030.

BY 2030

Population increase

↑25,000

Employment increase

↑26,900

Greenhouse Gas Emissions increase

↑42,000 tCO_2e

Twenty-five years ago people could be excused for not knowing much, or doing much, about climate change. Today we have no excuse.

- Desmond Tutu, Former Archbishop of Cape Town

Targets

Despite increasing resource usage and the resulting greenhouse gas emissions, commitments have been made to curtail emissions based on 2005 levels.

Net Zero

In 2015, the Government of Canada committed to the Paris Agreement which aims to **reduce GHG emissions by 30% below 2005 levels by 2030**. The federal government has also announced that it will develop a plan to **achieve net-zero emissions by 2050**.

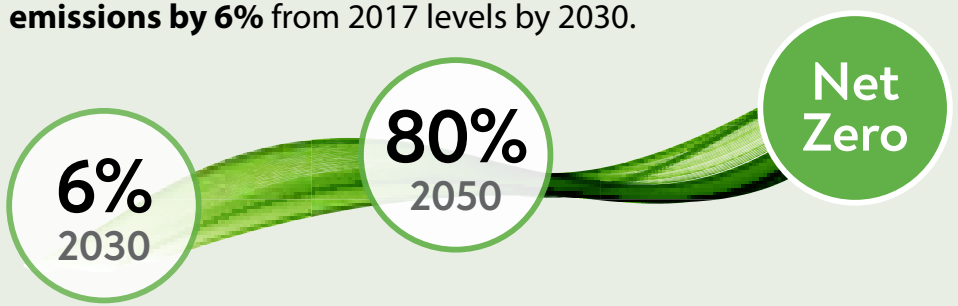
30% by 2030

In the **Made-in-Ontario Environment Plan**, the Ontario Provincial Government confirmed its commitment to align provincial greenhouse gas targets with the 30% by 2030 target set by the federal government.

6%

Partners in Climate Protection recommends a Community target of **6% reduction** in greenhouse emissions over 10 years.

Future Focused aims to **reduce Community greenhouse gas emissions by 6%** from 2017 levels by 2030.






Sector Emissions

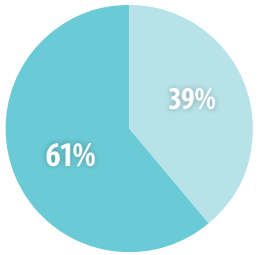
This study focuses on four main sources of greenhouse gas emissions; Buildings, Transportation and Streetlights, Agriculture and Solid Waste.

Sector emissions

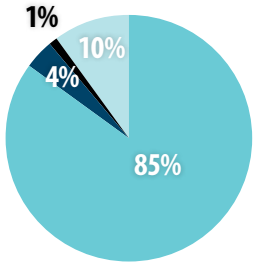
Buildings

Emissions from buildings were calculated using data from 2017 energy usage. Commercial and Industrial buildings contribute 61% of the emissions from buildings in the County. Emissions from natural gas are the largest (85%) source contributor.

Emissions by Building type



Source Emissions



85% **Emissions from natural gas are the largest source contributor**

What YOU can do!

For Farmers

- ☑ Upgrade farm equipment and buildings with higher efficiency models and heat recovery technologies to reduce energy bills and emissions.

For Residents

- ☑ Switch from natural gas to electric for your stove, dryer, water heater, heating and fireplace.

For Businesses

- ☑ Improve equipment efficiency on replacement and upgrade the building envelope by reducing air leaks and increasing insulation.

OBJECTIVE 1:

Develop strategies and associated policies in support of greenhouse gas reductions and energy conservation for existing buildings.

Greenhouse gas reductions and energy conservation can be achieved by undertaking deep energy retrofits – increasing insulation, thermal performance of windows and doors, reconfiguring walls and windows to optimize sunlight, and upgrade home heating systems to more efficient equipment and cleaner energy sources.

OBJECTIVE 2:

Develop strategies and policies in support of greenhouse gas avoidance and energy conservation in planned buildings and developments.

Future greenhouse gas emissions can be avoided through energy efficient design. Encouraging higher efficiency building construction and the use of cleaner energy sources will help transition the development industry to more stringent building code requirements anticipated in the future.

OBJECTIVE 3:

Develop strategies to build a culture of conservation in the community.

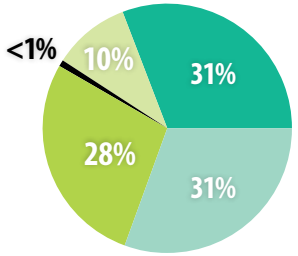
Knowledge sharing is key to community adoption of green energy and energy efficient design. Communities of practice are important platforms to explore innovative designs and technologies and provide support and inspiration to building owners and operators.

Sector emissions

Transportation

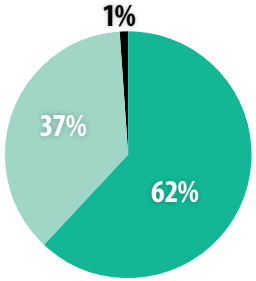
Transportation emissions were calculated using the number of households in the County of Wellington in 2016 and the average number of vehicles per household in Canada. The majority of transportation emissions in the County come from cars and light duty trucks.

Emissions by Building type



- Cars
- Light Truck
- Heavy Truck
- Bus
- Off-road Agriculture

Source Emissions



- Gasoline
- Diesel
- Propane

In 2020, 125 low-GHG emissions battery, electric and plug in hybrid electric cars were registered in the County of Wellington.

What YOU can do!

For Farmers

- ☑ Replace light duty pick up trucks with electric pick-ups available soon.

For Residents

- ☑ If you are in an urban area, make walking and cycling your first choice for local trips. For longer trips, go electric with your next vehicle purchase.

For Businesses

- ☑ Transition your fleet to electric vehicles. Look out for heavy equipment fuel alternatives under development.

OBJECTIVE 1:

Develop strategies to transition light duty vehicles to electric.

Switching from gasoline to electric vehicles is a powerful solution to reduce emissions from transportation in rural settings. Electric vehicles will require infrastructure at home and throughout the County to keep the community moving.

OBJECTIVE 2:

Develop strategies and policies to reduce dependency on the automobile.

Transitioning away from vehicle use in urban areas will require new approaches to planning and building design to improve connections between homes, shopping, work and amenities.

OBJECTIVE 3:

Develop strategies to support options for commuters to reduce greenhouse gases.

Improved access to broadband and shared transportation reduce vehicle use and drive down greenhouse gas emissions.

OBJECTIVE 4:

Develop strategies to reduce emissions from heavy duty vehicles and equipment.

Technologies to employ alternative fuels to diesel continue to develop. Access to alternative fuel stations is fundamental to support the switch to cleaner fuels for heavy vehicles and equipment.

OBJECTIVE 5:

Plan for future transportation needs.

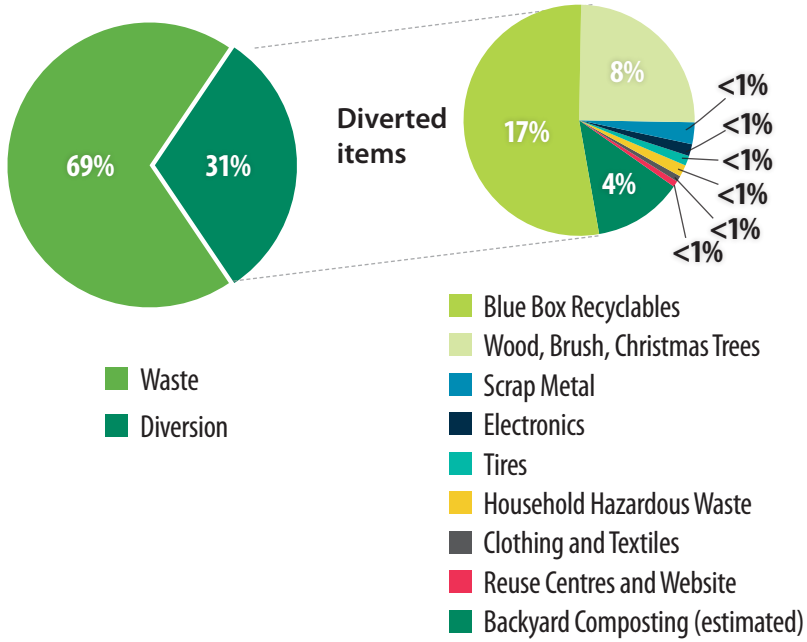
Transportation demand will increase with growing population and business. Future transportation needs need to avoid and, where possible, reduce greenhouse gas emissions.

Sector emissions

Solid Waste

In 2017, emissions from solid waste totaled over 17,000 t CO_2e. County residents do a great job diverting 31 percent of waste by weight (recyclables and other materials) away from the landfill. This saves space and creates new economies to reuse diverted items.

Waste Diversion at County of Wellington Landfill



31% **Percent of waste County residents diverted from landfill in 2017**

What YOU can do!

For Farmers

- ☑ Subscribe to a recycling service to divert bale wrap and other farm plastics from the landfill.

For Residents

- ☑ Start a backyard compost or participate in the County's organic green bin programme.

For Businesses

- ☑ Where packaging can't be reduced, make it reusable or recyclable.

OBJECTIVE 1:

Develop strategies to reduce solid waste generation.

Reducing the waste we generate by reducing packaging and creating circular economies will reduce emissions from solid waste as well as save space in the landfill.

OBJECTIVE 2:

Develop strategies to increase diversion rates.

The County has recently implemented green bin collection to use organic waste scraps as a resources and reduce waste going into the landfill. The County continues to explore partnerships to expand diversion programmes.

OBJECTIVE 3:

Empower the community through programme development.

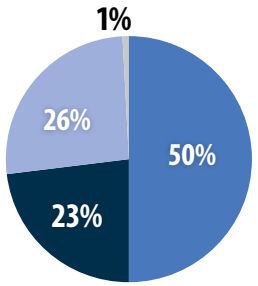
The County's Solid Waste Services Strategy lays out a pathway to implement waste programmes including engagement and education activities that help the community reduce greenhouse gas emissions.

Sector emissions

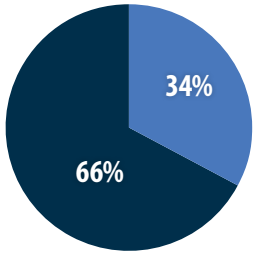
Agriculture

Emissions from agriculture were calculated using 2016 Canada Census data for County of Wellington and input from local industry contributors and academics. Sources of agriculture emissions include enteric fermentation, manure management, soil management and liming and urea application.

Emissions by Source Including Biogenic Methane



Emissions by Greenhouse Gas



66%

Emissions from biogenic methane that have the potential to be used as an energy source.

Current Initiatives

- ☑ **Rural Water Quality Programme**
  3,300 projects ($9.9 million) with 2/3 contributing to carbon sequestration (soil, manure, natural spaces management) since 1999.
- ☑ **Green Legacy Programme**
  Over 2.5 Million Trees planted since 2004.
- ☑ **Our Food Future**
  Provided grants and funding to 70 food companies in 2020 to reduce their waste and increase their circularity.

OBJECTIVE 1:

Develop strategies to empower farmers to reduce greenhouse gases on the farm.

County farmers continue to reduce greenhouse gases through manure and nutrient best management practices supported by the Wellington Rural Water Quality Programmes. Farmers also steward their natural spaces with the support of the Green Legacy Programme improving the uptake of greenhouse gases from the atmosphere.

OBJECTIVE 2:

Develop innovative strategies to promote and improve access to local food.

Our Food Future and Taste Real are working to increase availability and improve access to local food. Future actions to keep food local include establishing community gardens, promoting circular economy principles, and investigating opportunities for a local food processing facilities.

OBJECTIVE 3:

Build a culture of conservation in the community.

Expanding current communities of practice to share information about greenhouse gas reduction methods will promote methods and technologies that farmers can implement on the farm.

Emissions from all sectors:

SECTOR		Energy (GJ)	Emissions (CO_2e (t))
	Residential Buildings	2,908,200	81,500
	Commercial/ Industrial Buildings	4,428,200	118,300
	Transportation	-	467,400
	Solid Waste	-	17,000
	Agriculture	-	522,000
Total		**7,336,400**	**1,206,200**

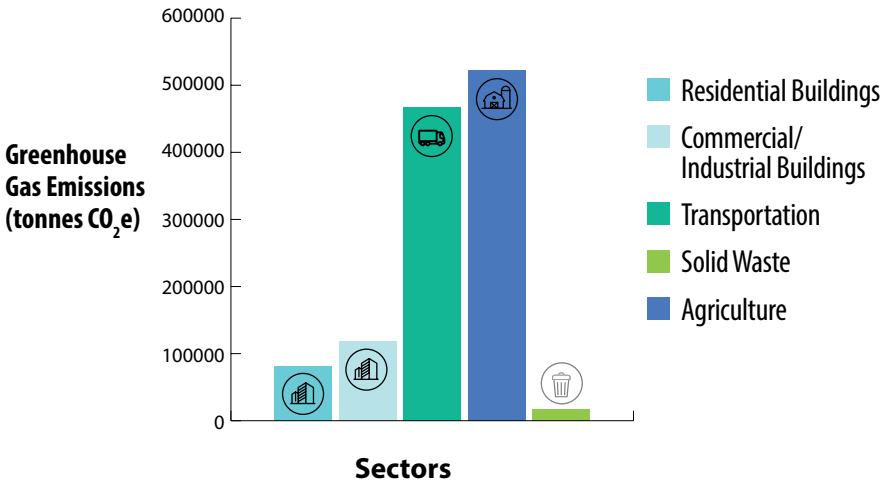


Table 1: Community Emissions Values by Sector (2017).

Sector emissions

Cross-Sectoral

Cross-sectoral objectives apply to more than one sector.

OBJECTIVE 1:

Develop strategies to support renewable energy in the community.

Renewable energy reduces greenhouse gas emissions and can be used in buildings, transportation and on the farm.

OBJECTIVE 2:

Develop strategies to support partnership-building and engagement with the community.

Educating and engaging the community, improving data management, and continuing to learn from new research will drive implementation of this plan.

Emissions reductions and avoidance can be estimated based on case studies that examine performance results of similar actions implemented elsewhere. GHG reductions and avoidance are presented as annual estimates upon completion of the actions listed. These calculations are based on the 2017 energy supply emissions intensity. Energy efficiency improvements as a result of new or advanced technologies have not been included.

6%

These estimates achieve the target of 6% reduction for Community emissions from the 2017 baseline.

5 Big Moves

SECTOR		ACTION	Total t CO_2e
	Buildings	Home Energy Retrofits	18,690
		Green Development Standards for new buildings	1,760
	Transportation	Transition to Electric Vehicles	27,140
	Agriculture	Continue to support farmers through established programmes: Rural Water Quality, Green Legacy, Smart Cities - Our Food Future	30,970
	Solid Waste	Continued implementation of the Solid Waste Services Strategy	3,400
TOTAL			**81,960**

Implementation

The recommendations in this plan will require advocates to ensure the outcomes are delivered effectively and within the timelines of the plan. For the County of Wellington and the community to be successful in achieving greenhouse gas emissions reductions, climate change action must become common practice.

Partnerships and Funding

There are a number of local, regional and national partners in public and private entities that will work together to achieve the objectives of this plan. Along with all levels of government, local partners work in the areas of building energy and efficiency, agriculture, utility services, transportation planning and services, alternative energy and fuels, climate change action, waste management and education and outreach.

Funding streams change regularly to align with the priorities of the sitting government and energy providers and regulators. The implementation of this plan will consider opportunities to utilize available funding streams to reduce municipal expenditures.

The County of Wellington will forge meaningful relationships with organizations with the shared goal of reducing greenhouse gas emissions. Partnerships with other levels of government, member municipalities, academia, private sector organizations, school boards and other institutions will focus on positive solutions and transformative action to provide technical assistance, transfer knowledge and develop financial support within the community.

Monitoring and Reporting

Key performance indicators, GHG emissions and task completion will be tracked throughout implementation to show the community's progress toward our 2030 goal.

Progress will be reported on annually and will include an assessment of the plan to determine if amendments are needed to consider new information, data, etc. which may impact the ability of the County to deliver the recommendations.

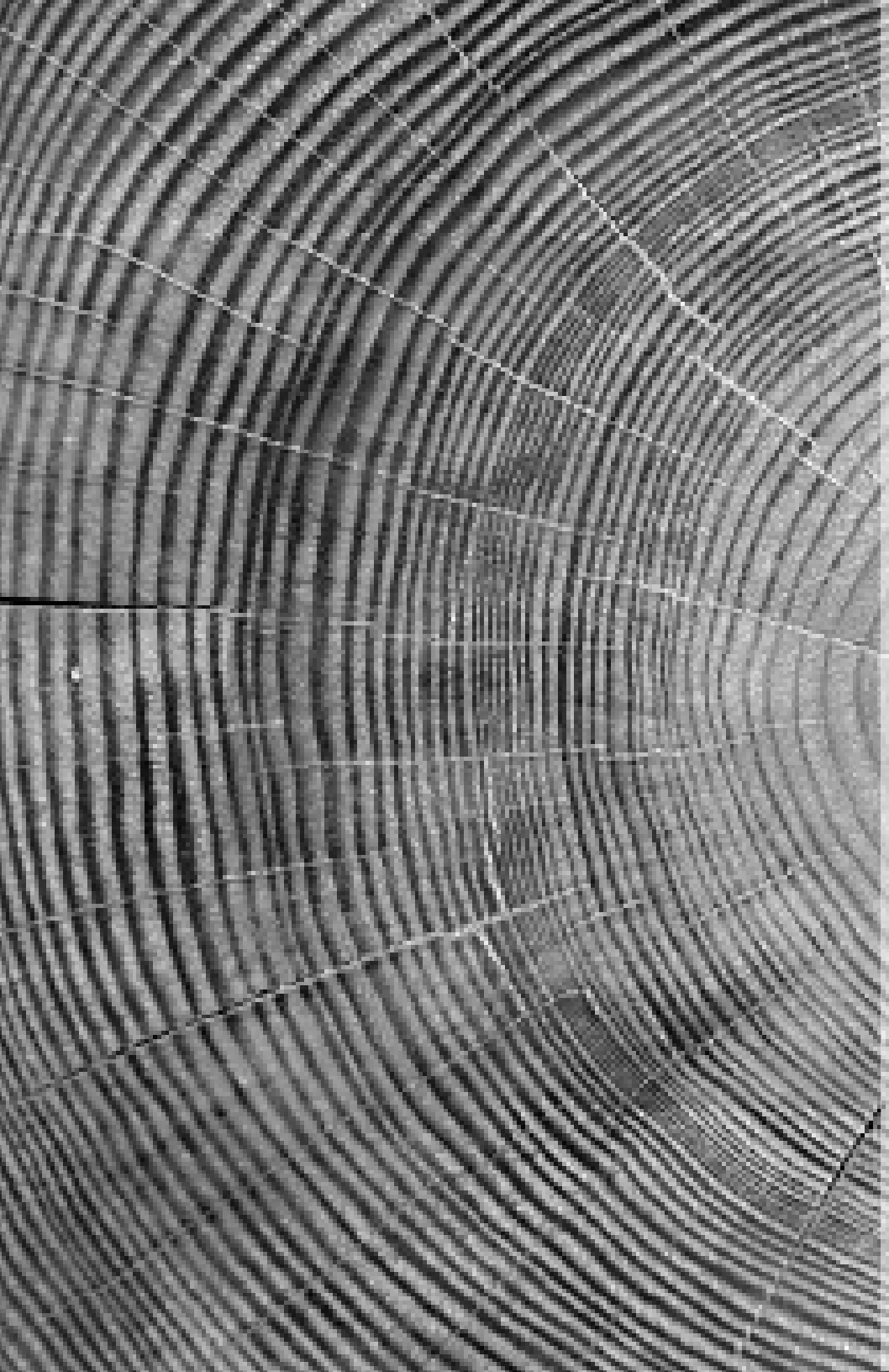
Prior to the conclusion of this plan in 2030, the County will complete a full review and update of the plan to re-establish the County's commitment to emissions reductions, re-calibrate targets and set new recommendations to continue our pathway to meet Canada's goal of net-zero by 2050.

Conclusion

Future Focused demonstrates the County's commitment to lead the community on climate change action by integrating climate change into our decision-making to deliver superior public service for healthy and safe communities and resilient ecosystems. It builds on established County programmes to expand or refocus efforts to reduce greenhouse gas emissions. The recommendations in this plan seek to support the community through the transition to net-zero in 2050 in alignment with the goals of the federal government. Short-term targets of reducing Community emissions by 6% from 2017 levels by 2030 have been established to set us on a pathway to achieve this longer-term goal, with monitoring and reporting to track our progress.

The challenge ahead signals a new way of living and doing business. One that is inclusive, equitable, safe and clean. The opportunities through the transition to a net-zero community are vast. It will take our collective efforts to meet this challenge and the County is proud to lead this charge.

For more information visit www.wellington.ca



Alternate formats available upon request.

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