

County of Renfrew Climate Action Plan

Prepared for:

County of Renfrew

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Acronyms

AE: administration - energy

AM: administration – mobility

AC: administration – culture

AG: administration - governance

BAU: Business as Usual

CM: Community

GHG: Greenhouse gas

RNG: Renewable natural gas

SBTi: Science Based Target initiative

UNFCCC: United Nations Framework Convention on Climate Change

tCO₂e: Tonne of CO₂ equivalent

1 Introduction and Context

In 2024, the County of Renfrew joined municipalities across Canada in addressing climate change as a member of the Partners for Climate Protection (PCP) program. This initiative reflects a commitment to reducing GHG emissions from both municipal operations and community sources, aiming to mitigate climate change across our communities. As part of the PCP program, the County of Renfrew's Climate Change Action Plan (CCAP) sets forth a roadmap to lower greenhouse gas emissions, cut fossil fuel use, and prepare for anticipated climate impacts. The plan outlines targeted strategies and actions tailored to the needs of each community within the County, ensuring a coordinated approach that strengthens local environmental and economic stability.

Renfrew County, like the rest of Ontario, has experienced a significant increase in average temperatures. Between 1948 and 2008, the average annual temperature in Ontario increased by approximately 1.5 degrees Celsius¹. This warming trend has continued, with projections indicating that average temperatures in the region could rise by 3 to 8 degrees Celsius over the next century.

Counties and municipalities play a critical role in climate action, as they are the closest to the community and have the ability to implement localized solutions that address unique regional needs. By leading efforts in GHG reduction and climate resilience, they can directly influence sectors such as transportation, building efficiency, and waste management, which are key to lowering emissions. Through proactive climate policies and engaging residents, they set the foundation for a sustainable future, fostering healthier, more resilient communities while contributing to broader national and global climate goals.

The climate action plan is grounded in the GHG inventory, which provides a comprehensive analysis of emission sources across sectors such as transportation, energy, buildings, and waste. This inventory serves as the baseline for identifying the largest contributors to GHG emissions, guiding the prioritization of actions and enabling measurable targets for emissions reduction. By establishing a clear emissions profile, the GHG inventory allows for targeted strategies that address specific local needs, ensuring that the climate action plan is both data-driven and impactful. The GHG inventory is available in Appendix 1.

¹ https://files.ontario.ca/moh-ontario-climate_change-health-modelling-study-en-2016-08-01.pdf

2 Business-As-Usual (BAU) Emissions Projections

The Business-As-Usual (BAU) emissions scenario provides a projection of greenhouse gas (GHG) emissions through 2030, assuming no additional climate actions beyond current policies and practices. This scenario establishes a baseline trajectory, showing anticipated increases in emissions driven by key factors such as population growth, rising energy demand, and economic development. Under the BAU scenario, emissions are expected to continue on an upward path as the community needs to expand and energy consumption increases. These projections underscore the necessity for targeted interventions to alter the trajectory and achieve long-term GHG reduction goals.

• **Table 2.1: BAU emissions projections (tCO₂e²)**

	2021	2030	2050
County GHG emissions	6,204	6,328	6,797
Difference total emissions (base year 2021)	-	2%	10%
Community GHG emissions	1,443,167	1,392,452	1,310,397
Difference total emissions (base year 2021)	-	-4%	-9%

• _____

² tCO₂e stands for "tonnes of carbon dioxide equivalent." It is a standard unit used to express the global warming potential of different greenhouse gases (GHGs) in terms of the amount of CO₂ that would produce an equivalent warming effect. By converting various GHGs (like methane, nitrous oxide, etc.) to CO₂e, this measure enables a unified approach to tracking and comparing emissions across diverse sources and types.

3 GHG emissions targets

The climate action plan establishes ambitious GHG reduction targets for both municipal operations and the broader community, reflecting a strong commitment to mitigating local contributions to climate change. For municipal operations, these targets outline reductions in areas under direct control, such as public buildings, municipal fleets, and waste management. The wider community targets encompass emission sources beyond municipal operations, like residential and commercial energy use, as well as transportation.

These local targets should align closely with both Canada's and Ontario's GHG reduction goals, underscoring the county's role in advancing provincial and national climate priorities. Canada's current targets commit to reducing emissions by 40-45% below 2005 levels by 2030, with a net-zero goal by 2050. Ontario has similarly adopted a 30% reduction target by 2030 based on 2005 levels, emphasizing the need for collaborative action across all sectors.

The climate action plan sets a clear target for GHG emissions reduction, aiming for a 20% decrease in emissions from county operations and a 20-25% reduction in community-wide emissions by 2030, with 2021 as the baseline year.

4 Climate change action plan

4.1 Description of the action plan

The County's Climate Action Plan organizes actions into key categories that address priority areas for GHG reduction and climate resilience.

- **Improve building energy efficiency:** this category encompasses actions focused on the efficient use and conservation of resources, as well as energy management in county-owned buildings.
- **Mobility,** which aims at reducing the carbon footprint of the County's vehicle fleet through green and high-performance solutions.
- **Governance:** and **culture,** which recognizes the importance of a culture of sustainability.

The community action plan is structured around the emission sources that benefit from the various proposed measures. It's important to note that some actions have effects across multiple categories and cannot be considered in isolation. This is why a ranking system called "GHG score" was implemented for actions on a scale from 0 to 10. A score of 10 indicates that the action has the highest potential for positive impact in the category it affects. This scoring system is designed to help prioritize actions effectively and strategically. This ranking system not only allows us to evaluate the potential impact of each action but also to visualize the synergies between different measures. As a result, decision-makers and the community can better understand the relative importance of each initiative and focus their efforts on the most promising actions to reduce emissions and achieve the set climate goals. By adopting this approach, the aim is to maximize the effectiveness of the action plan and ensure that resources are optimally allocated to achieve the best possible results in the fight against climate change.

Some actions include detailed cost estimates, while a scaling system was developed to assess the costs of other actions, as described below:

- **\$:** Refers to options where the cost of avoiding one tonne of CO₂ equivalent is less than \$150, which typically includes low-cost, high-impact strategies.
- **\$\$:** Represents strategies where the cost of avoiding one tonne of CO₂ equivalent is between \$150 and \$500, which involves moderate investments with a reasonable return on environmental and social benefits.
- **\$\$\$:** Signifies measures where the cost exceeds \$500 per tonne of CO₂ equivalent avoided, which often includes cutting-edge technologies or projects with high upfront costs and long-term benefits.

4.2 Actions for the County

Improve building energy efficiency				
Reduction potential				
30%	Reduction of:		751 tCO ₂ e	
	Level in 2021:		2,508 tCO ₂ e	
	Level in 2030:		1,757 tCO ₂ e	
ID	Action	Description	Cost	GHG SCORE
AE1	Completion of a comprehensive energy level 2 audit that meets ASHRAE standards	Completion of the audit for Bonnechere Manor, the Miramichi Lodge, the County Admin Bldg, Renfrew County Place, the Building 236 and the buildings of the Renfrew County Housing Corporation (RCHC).	100,000\$	0
AE2	Implementation of the audit recommendations	Implementation of recommendations identified within the scope of the audit, leading to a 20% GHG emissions reduction by 2030.	0	10
AE3	Analysis of thermal energy	Analysis of thermal energy recovery opportunities and optimization of heat network with surrounding buildings.	50-100k\$	0
AE4	Densification of activities	Densification of activities and cessation of non-essential assets. (Arnprior Paramedic Base)	0	0
AE5	On-site renewable energy production	On-site or nearby renewable energy production scaling up.	~3,000,000\$	2
AE6	Substitution of natural gas	Done by using more renewable natural gas (RNG).	~223,000\$	5
AE7	Energy-saving habits promotion in Renfrew County Housing Corporation (RCHC)	Done by enhancing tenant awareness (for instance, updating tenants on enhancements, offering energy-saving suggestions via a newsletter, displaying information in shared areas, etc.)	0	1

Reduce the carbon footprint of the County's vehicle fleet through green and high-performance solutions

Encourage the reduction of the average distance travelled, promote the proximity of activities, and facilitate short journeys

Reduction potential

20%	Reduction of:	353 tCO ₂ e
	Level in 2021:	1,735 tCO ₂ e
	Level in 2030:	1,382 tCO ₂ e

ID	Action	Description	Cost	GHG SCORE
AM8	Audit of vehicle fleet utilization	Also add asset management through telematics.	0	0
AM9	Training focused on eco-friendly driving	Training focused on eco-friendly driving, fuel consumption optimization during usage, and systematic remote mechanical diagnostics, and use of low-resistance tires.	0	1
AM10	Route optimization	Route optimization based on inventory results when relevant (waste trucks) and optimization of low-emission vehicle sharing between different departments aside from EMS.	0	1
AM11	Set up electric vehicle charging stations	Set up electric vehicle charging stations at County facilities for the County fleet, as well as for staff, counselors, and public access.	0	0
AM12	Replacement of targeted internal combustion engine vehicles by electric vehicles	Replacement of targeted internal combustion engine vehicles by electric vehicles (25 pick-ups and trucks, not including critical services such as EMS for which the next generation of batteries are needed).	250,000 \$	10
AM13	Develop an Employee Travel Management Plan (TDM).		0	4
AM14	Pursue carpool initiative	Encourage ride sharing and WFH arrangement when relevant.	0	2

Promote a culture of climate care

Ensure the success of mitigation activities through strong climate governance

ID	Action	Description
AC15	Increase employee awareness	Increase employee awareness of corporate climate initiatives through outreach campaigns and training programs.
AC16	Annual reports	Communicate on the advancement of climate measures implementation through annual reports.
AG17	Climate Action Committee	Form a Climate Action Committee composed of relevant stakeholders, including public representatives.

4.3 Actions for the Community

Fossil Fuels - Commercial, Institutional & Residential						
Reduction potential						
Total		Commercial and industrial		Residential		
15%	Reduction of:	13,743 tCO ₂ e	17%	22,136 tCO ₂ e	14%	
	Level in 2021:	82,745 tCO ₂ e		157,265 tCO ₂ e		
	Level in 2030:	69,002 tCO ₂ e		135,129 tCO ₂ e		
ID	Action	Description			Investment	GHG SCORE
CM26	Revision of Existing Regulations	Simplify the permit acquisition process for projects that align with the plan's objectives (see minimum standards below), while preventing any activity that doesn't align with these standards during permit applications or property transfers between individuals.				0
CM27	New Constructions - Promotion of Strict Energy Performance Standards	Establish regulations requiring all new buildings to be constructed with high-quality insulation and integrated renewable technologies. The county can also consider adopting measures to limit new connections to fossil fuels for new constructions.			\$ (<\$150/tCO ₂ e avoided)	0
CM28	Existing Buildings - Establishment of Minimum Insulation and Energy Efficiency Standards	Define standards requiring minimum insulation levels for all existing buildings, thereby encouraging property owners to improve the energy efficiency of their properties. Consider tax incentives for owners who comply with established standards or go beyond by adopting more advanced technologies.			\$ (<\$150/tCO ₂ e avoided)	2

CM29	Facilitation of Transition to Renewable Heating Technologies	Implement technical and financial assistance programs to help property owners overcome barriers related to the adoption of renewable heating systems, such as heat pumps. Collaborate with local partners to develop initiatives aimed at increasing the availability of trusted contractors and training a skilled workforce to meet the growing demand for eco-energy renovations.	\$ (<\$150/tCO ₂ e avoided)	2
CM30	On-site Energy Production: Encourage the installation of solar panels on the roofs of the county's buildings.	By integrating community solar farm panels into a "microgrid", the county can reduce its dependence on fossil fuels and increase energy resilience by ensuring local electricity supply, even in case of disruptions to the main grid. These solar farms located on county or municipal lands or lands shared by the community, allow residents to participate in renewable energy production.	\$\$ (between \$150 and \$500/tCO ₂ e avoided)	2
CM31	Encourage the Adoption of Renewable Natural Gas (RNG)	RNG, produced from organic materials such as agricultural waste or municipal organic waste, offers a renewable alternative for heating.	\$\$ (between \$150 and \$500/tCO ₂ e avoided)	1
CM32	Develop initiatives to advance markets for woody biomass	For woody biomass and agricultural/organic waste as sustainable energy sources, with considerations for district heating applications. This includes fostering partnerships and policies to support the adoption of woody biomass within the community, particularly in areas where it can serve district heating needs.	0	0
CM33	Engage Collaboration within the Industrial Fabric and Enable Synergy Between Stakeholders	Encourage the development of local heat loops, allowing the recovery and reuse of residual heat from various sources, such as factories for heating county residential and commercial buildings.	0	0

Fossil Fuels - Industrial

Reduction potential

15%	Reduction of:	13,743 tCO ₂ e
	Level in 2021:	82,745 tCO ₂ e
	Level in 2030:	69,002 tCO ₂ e

ID	Action	Description	Investment	GHG SCORE
CM34	Engage in Discussions with Industrial Zone Stakeholders	Obtain first-hand information about their GHG emissions. This could involve interviews to understand production processes and potential emission sources.	0	0
CM35	Collaboration with Industrial Companies for Engagement with SBTi	Engage in discussions with involved companies and mobilize stakeholders in the development and implementation of science-based GHG emission reduction targets. The SBTi encourages companies to adopt emission reduction targets aligned with the Paris Agreement.	\$ (<\$150/tCO ₂ e avoided)	10

Reduce the carbon footprint of transportation through green and efficient solutions.

Promote the attractiveness of collective, active, and shared modes of transportation, in accordance with the Transportation Master Plan

Reduction potential

24%	Reduction of:		136,760 tCO ₂ e	
	Level in 2021:		683,324 tCO ₂ e	
	Level in 2030:		546,564 tCO ₂ e	
CM18	Charging Infrastructure	The county can invest in deploying additional charging infrastructure for electric vehicles to encourage fuel substitutions. This could include installing charging stations in public places, parking lots, and residential areas.	0	0
CM19	Encourage residents to transition to electric vehicles	Promoting the availability of national subsidies and incentives for EV adoption.	\$\$ (between \$150 and \$500/tCO ₂ e avoided)	2
CM20	Implementation of an awareness campaign to reduce idling of vehicles	Aimed at lowering air pollution and improving air quality. This campaign will focus on educating drivers about eco-friendly practices.	\$ (<\$150/tCO ₂ e avoided)	1

CM21	Smart Traffic Light Management	The county can invest in intelligent management systems that optimize real-time traffic flow, thereby reducing waiting times and emissions associated with congestion.	\$ (<\$150/tCO ₂ e avoided)	4
CM22	Financial and Regulatory Incentives	The county can offer financial incentives for the purchase of bicycles, electric bicycles, cargo bikes, or for the installation of charging stations. Additionally, it can encourage carpooling by implementing financial incentives for drivers who share their rides with others. In parallel, it can also establish regulations to limit the access of ICE vehicles in certain urban areas, thereby promoting the adoption of more sustainable transportation modes.	\$ (<\$150/tCO ₂ e avoided)	0
CM23	Urban Planning	The country can promote soft densification by planning urban development around public transportation axes, Transit-Oriented Developments (TODs), and by encouraging functional mixed use to reduce travel distances. This supports active mobility by creating dedicated infrastructure for active transportation modes.	\$ (<\$150/tCO ₂ e avoided)	3
CM24	Promotion of Public Transportation	The county can encourage the use of public transportation by investing in quality infrastructure and by offering an attractive solution to the population. For example, integrating on-demand transportation services can enhance mobility by providing personalized trips based on the specific needs of citizens.	\$\$\$ (>\$500/tCO ₂ e avoided)	4
CM25	Safe and Functional Infrastructure for Active Mobility	The county can invest in deploying suitable and safe infrastructure, promoting the movement of pedestrians and cyclists includes wide sidewalks, bike lanes separated from traffic, well-signposted pedestrian crossings, adequate lighting, and landscaping that facilitates soft mobility. This serves major points of interest such as schools, parks, shopping centres, and workplaces.	\$\$ (between \$150 and \$500/tCO ₂ e avoided)	4

Reduce non-recycling of waste and accelerate their transformation into useful resources for the territory

Reduction potential

36%	Reduction of:	17,427 tCO ₂ e
	Level in 2021:	47,775 tCO ₂ e
	Level in 2030:	30,348 tCO ₂ e

ID	Action	Description	Investment	GHG SCORE
CM36	Promotion of Short Supply Chains for Waste Management	Encourage the creation of composting sites for the community where residents can bring their organic waste to be transformed into compost for use in county green spaces.	\$ (<\$150/tCO ₂ e avoided)	1
CM37	Financial Incentives and Eco-Taxation:	The county can offer financial incentives such as grants or tax credits to encourage businesses aiming for waste reduction and the installation of domestic composting systems or greywater reuse. Additionally, it can implement regulations promoting waste reduction at the source, such as a pay-as-you-throw system where residents pay based on the amount of waste produced, thereby encouraging source reduction and composting.	\$ (<\$150/tCO ₂ e avoided)	1
CM38	Encouragement and Recognition of Recycling	The county can implement awareness programs aimed at encouraging residents to recycle properly. In parallel, it can introduce a symbolic reward system, such as placing a star on the bins of households that recycle exemplary. This positive approach aims at valorizing the efforts of environmentally conscious citizens, creating a benevolent and collaborative recycling culture within the community.	\$ (<\$150/tCO ₂ e avoided)	1

Increase synergy among local businesses, enhance its competitiveness, and engage the industrial companies to set targets by 2030

Reduction potential

24%	Reduction of:	31,583 tCO ₂ e
	Level in 2021:	129,212 tCO ₂ e
	Level in 2030:	97,629 tCO ₂ e

ID	Action	Description	Investment	GHG SCORE
CM34	Engage in Discussions with Industrial Zone Stakeholders	Obtain first-hand information about their GHG emissions. This could involve interviews to understand production processes and potential emission sources.	0	0
CM35	Collaboration with Industrial Companies for Engagement with SBTi	Engage in discussions with involved companies and mobilize stakeholders in the development and implementation of science-based GHG emission reduction targets. The SBTi encourages companies to adopt emission reduction targets aligned with the Paris Agreement.	\$ (<\$150/tCO ₂ e avoided)	10

Support agricultural businesses in integrating climate issues

Reduction potential

28%	Reduction of:	61,072 tCO ₂ e
	Level in 2021:	216,988 tCO ₂ e
	Level in 2030:	155,916 tCO ₂ e

ID	Action	Description	Investment	GHG SCORE
CM39	Engage in Discussions with Agricultural Stakeholders	Obtain first-hand information about their GHG emissions. This could involve interviews to understand production processes and potential emission sources.	0	0
CM40	Collaboration with Agricultural Companies for Engagement with SBTi	Engage in discussions with involved companies and mobilize stakeholders in the development and implementation of science-based GHG emission reduction targets. The SBTi encourages companies to adopt emission reduction targets aligned with the Paris Agreement.	\$ (<\$150/tCO ₂ e avoided)	2
CM41	Promote the Adoption of Projects Aimed at Lowering GHG Emissions	The county can support producers by identifying and implementing measures to reduce agricultural emissions, as well as raising awareness about available funding through the Renewable Fuel Standard regulation.	\$\$ (between \$150 and \$500/tCO ₂ e avoided)	0
CM42	Facilitate Innovation in the Agricultural and Forestry Sectors	By integrating practices based on natural solutions, such as regenerative agriculture, sustainable forest management, the use of biochar, sustainable livestock systems, and ecosystem restoration, the county can offer technical support and advice to businesses to develop and implement carbon capture solutions.	\$ (<\$150/tCO ₂ e avoided)	0

4.4 Special consideration for forest and tree planting

4.4.1 Current forest

Forests play a significant role in the County of Renfrew, contributing to biodiversity, ecosystem services, and carbon sequestration. Based on available data from 2015, approximately 70% of the County's total land area, or 5,400 square kilometres (1,334,369 acres), is classified as “wooded.” This includes Crown lands, private forests, and municipal holdings. However, no recent data is available to confirm if there has been any change in forest cover, though a slight decrease is expected over time.

Of the total forested area, Crown land constitutes 247,424 hectares (611,398 acres), while the County itself owns 5,493 hectares (13,573 acres), which includes managed forest tracts. An additional 1,034 hectares of County land is classified as wetlands, brush, or water. Private forests, while contributing significantly to the overall coverage, are not included in specific calculations due to the lack of guarantees around long-term forest preservation on private property.

The County’s forest tracts are acknowledged for their ecological and recreational value. However, these tracts are not currently utilized to offset greenhouse gas (GHG) emissions. The carbon stored in forests is typically not accounted for in a GHG inventory for organizational or territorial emissions because such inventories are designed to focus on anthropogenic (human-caused) emissions and removals. Forest carbon is considered part of the natural carbon cycle and is usually accounted for in national-level inventories prepared under frameworks like the UNFCCC. Unless there is a direct anthropogenic activity, such as deforestation or afforestation, influencing the forest’s carbon balance, its carbon stock is considered a neutral component of the terrestrial carbon cycle.

Furthermore, complexities around quantifying and verifying carbon sequestration, as well as the administrative and certification requirements associated with formal carbon offset programs, present additional challenges. Moreover, these forests are often managed with multiple objectives, such as conservation, recreation, and resource use, which may not align directly with offset protocols.

By highlighting the extent and management of these forests, the County demonstrates its ongoing commitment to preserve these vital natural assets while also recognizing the broader challenges of integrating them into GHG accounting frameworks.

4.4.2 Additional tree planting

Planting trees brings a variety of benefits such as:

Environmental Benefits:

A community tree project improves the environment by sequestering carbon, reducing GHG emissions, and filtering pollutants for cleaner air. Planting native species enhances biodiversity by creating wildlife habitats, while trees also help prevent soil erosion, filter stormwater, and protect water quality.

Social Benefits

The project fosters community engagement through tree planting events and education, promoting a sense of shared responsibility for the environment. Green spaces improve mental health, reduce stress, and encourage physical activity. Educational workshops empower residents with knowledge about tree care, climate action, and sustainability.

Economic Benefits

Tree planting reduces energy costs by shading buildings in summer and acting as windbreaks in winter. It increases property values and generates local jobs in tree care and monitoring. As a cost-effective climate action, planting trees offers significant environmental and social returns.

Resilience and Adaptation Benefits

Trees enhance climate resilience by managing stormwater, reducing flood risks, and cooling neighborhoods during heatwaves. They foster a sense of community pride while strengthening the area's ability to adapt to extreme weather.

Therefore, the County could establish a Community Tree Project inspired by Credit Valley Conservation's initiative to enhance community resilience and mitigate climate change impacts.

The key actions could be as follows

- **Tree Planting Events:** organize events targeting parks, schools, or public spaces to engage residents and promote environmental stewardship.
- **Tree Giveaway Program:** distribute free trees to residents, encouraging private planting and increasing urban tree canopy cover.
- **Educational Initiatives:** offer workshops and materials on tree care, climate benefits, and planting best practices.
- **Conservation Authority Partnerships:** collaborate with local conservation authorities for expertise in species selection and planting locations.
- **Large-Scale Planting Efforts:** partner with programs like the 2 Billion Trees initiative to access funding and set ambitious planting targets.
- **Corporate Engagement:** involve local businesses in greening efforts by assessing planting opportunities on corporate lands and offering incentives.
- **Long-Term Monitoring:** track growth and health of planted trees, estimate carbon sequestration, and engage volunteers in maintenance.

This program would strengthen community ties, improve local ecosystems, and contribute to climate adaptation and mitigation efforts.

5 Monitoring tool

To ensure the effectiveness and transparency of the climate action plan, a monitoring tool was developed to track the County's progress over time. This tool serves for visualizing GHG emissions for each year.

The tool is designed to measure progress against the targets outlined in the climate action plan for both the County's operations and the broader community. It provides a clear overview of how current actions align with long-term objectives.

This monitoring tool empowers the County to make informed decisions, prioritize impactful actions, and demonstrate leadership in climate action. It also provides a foundation for continuous improvement, ensuring that efforts remain aligned with the County's vision for a sustainable and resilient future.

6 Forecast GHG emissions

A greenhouse gas (GHG) emissions forecast is an analytical projection of future GHG emissions, accounting for current and anticipated factors such as population growth, economic trends, energy consumption, land use changes, and policy measures. These forecasts illustrate how emissions are expected to evolve over time under the assumption that all recommended actions in the mitigation plan are fully implemented. It serves as a critical tool for understanding the potential impact of these strategies and provides a clear pathway toward achieving emissions reduction goals.

6.1 County forecast

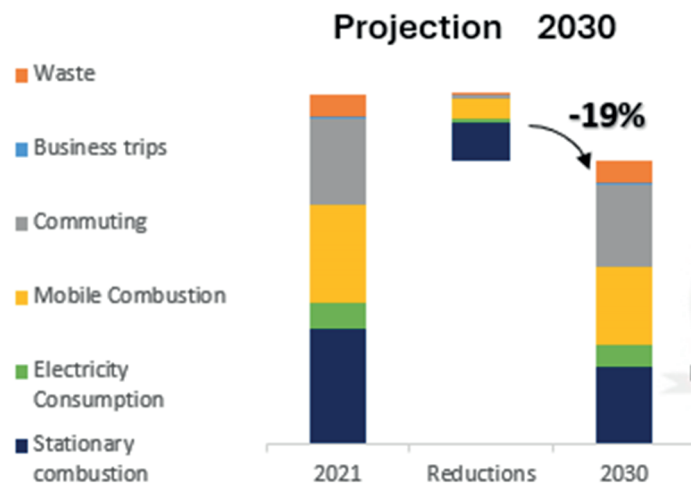


Figure 6.1: County GHG emission forecast by 2030

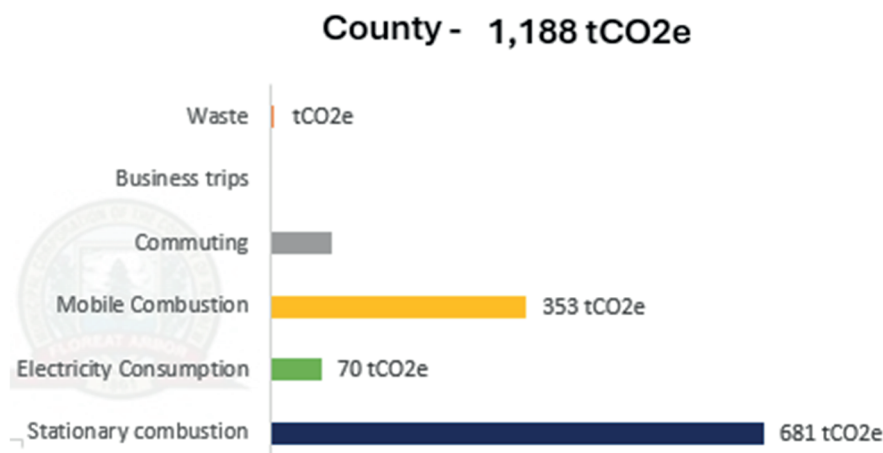


Figure 6.2: County GHG emission category contributions to the reductions

6.2 Community forecast

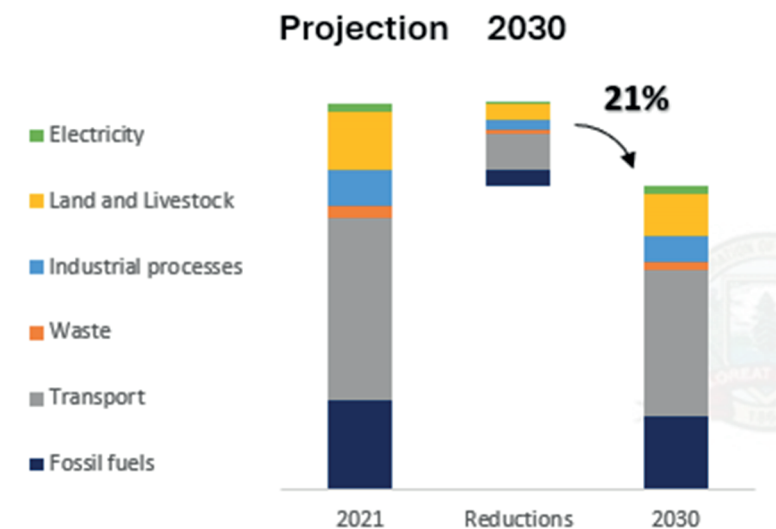


Figure 6.3: Community GHG emission forecast by 2030

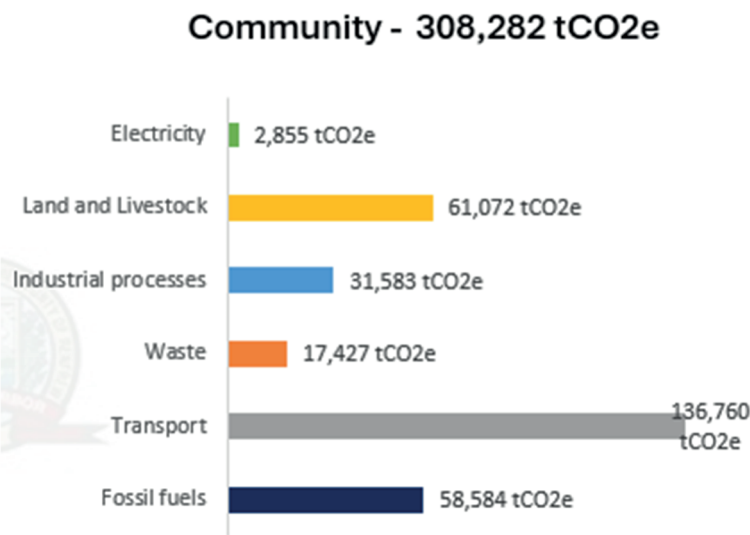


Figure 6.4: Community GHG emission category contributions to the reductions

Appendix 1 : GHG emissions inventory