



To: Climate Protection Working Group
From: Richard Grant, Planner I
Date: August 13th, 2024
Title: Climate Action Plan Milestone 1 Completion

Recommendation: That the Climate Protection Working Group receive this report for information on the completed Corporate and Community Emissions Inventory Data for Milestone 1 and the next steps for Milestone 2.

Purpose: To update the Climate Protection Working Group (CPWG) on the progress toward achieving Milestone 1 of the Partners for Climate Protection (PCP) Program with Corporate and Community Emissions Inventory Data and the corresponding Business-as-Usual forecast and the next steps for completing Milestone 2.

Background:

Corporate Emissions Inventory – Milestone 1

Using 2021 as the baseline year, staff assembled the corporate emissions inventory data for Milestone 1. A corporate or municipal GHG inventory outlines the GHG emissions generated from the Town's operations and services. This inventory serves as the foundation for setting emission reduction targets and monitoring performance in the years to come. The corporate GHG emissions inventory is designed to capture GHG emissions attributable to local government operations. The purpose is to identify the GHG emissions within the Town's direct control and influence and for which the Town, as a corporation, is responsible. It includes emissions arising from the use of all significant assets and services, including:

- Buildings and facilities
- Fleet vehicles
- Streetlights and traffic signals
- Water and wastewater infrastructure
- Solid waste

The corporate inventory is a subsector of the community inventory. In most cases, corporate emissions fall entirely within the sphere of the community inventory. It is important to note that while the corporate inventory is considered a subsector of the community inventory, it is assessed independently to ensure no double counting occur during the assessment. Occasionally, emissions from corporate operations fall outside of the community inventory, i.e. when waste is managed outside of the geographic boundary of the community or when air travel is factored into a corporate GHG inventory and management plan. In Smiths Falls, some corporate services, such as managing the wastewater treatment facility, are measured within the Community GHG emissions inventory because they represent the community contribution to wastewater-related GHG emissions.

Completing the corporate GHG emission inventory data utilized consumption data from the Town's energy and fuel providers, Hydro One, Enbridge, and Esso, to develop an

assessment of the town's emissions from all significant assets and services organized into the applicable energy sectors outlined above for the baseline year of 2021. Using the 2021 Hydro One, Enbridge and Esso bills, the monthly energy consumption and expenditure were aggregated resulting in a comprehensive review of each significant asset or service provided by the corporation. The development of the corporate emissions inventory dataset revealed some untested assumptions about suitable energy sources for buildings, facilities, and water and wastewater infrastructure. A completed corporate GHG emission inventory data shows the corporations' GHG emissions per sector and energy source (see Appendix A – Corporate Emissions Inventory Dataset and Business-as-Usual Forecast).

A completed corporate emissions inventory for Milestone 1 also includes a business-as-usual forecast (BAU), which forecasts the rate of GHG emissions for the Town (both corporately and community-wide) if things continue on the current trajectory to 2030. A population growth projection of 1.12%, derived from a Lands Needs Study (2022), a land needs assessment of the Town, informs the BAU forecast. That is, if the Town did not implement any of the GHG emission reduction strategies and climate change mitigation efforts that would be proposed in a climate action plan. The BAU timeline follows the 10-year commitment that the Town has committed to, with the established baseline of 2021.

Please see Appendix A – Corporate Emissions Inventory Dataset and Business-as-Usual Forecast.

Community Emissions Inventory – Milestone 1

In contrast, the Community GHG Inventory involves a much larger scope than the Corporate Emission Inventory, estimating the GHG emissions generated within the community. While the Town may have limited control/influence over certain community activities, the whole intent of recording the community GHG emissions is to document, as accurately as possible, the GHG emissions arising from all significant activities within the municipal boundaries of the community. This includes emissions generated by activities such as residential energy consumption and on-road transportation.

The Community GHG Inventory was also assembled using 2021 as the baseline year. Similar to the corporate emissions inventory, the baseline established will also serve as the foundation for future emission reduction targets and facilitate monitoring future performance.

The Community GHG Emissions Inventory assessed five activity sectors for the baseline year of 2021:

- Stationary Energy;
- Transportation;
- Waste: Community Solid Waste and Wastewater
- Agriculture, Forestry, and Other Land Uses (AFOLU); and,
- Industrial Processes and Product Use (IPPU).

Similar to the Corporate Emissions Inventory, a completed Community Emissions Inventory also comes with a Business-as-Usual Forecast. The remaining energy sectors, Transportation and Agriculture, Forestry, and Other Land Uses (AFOLU), will be discussed in greater detail in the Analysis and Options section of this report

Please see Appendix B – Community Emissions Inventory Dataset and Business-as-Usual Forecast.

Analysis and Options:

Transportation

The community transportation energy sector comprises five subsectors: (1) on-road, (2) off-road, (3) railway, (4) waterborne navigation, and (5) aviation. Of the remaining sub-sectors, only waterborne navigation and aviation transportation were re-reviewed for final consideration and assessed for their applicability within the Milestone 1 reporting levels (i.e., Scope 1, 2 or 3).

- *Waterborne Navigation*

Water transportation includes ships, ferries and other boats operating within municipal boundaries, as well as marine vessels whose journeys originate or end at ports/docks within the municipality's border but travel to destinations beyond the municipality's limits. To appropriately scale this review, water transportation was limited to movement within the municipality's border, which, under the Milestone 1 reporting levels, would be categorized as Scope 1. While in some reporting methodologies, a distinction is made between recreational use and domestic shipping/travel, for the sake of practicality, all waterborne navigation in Smiths Falls is considered recreational, based on the predominant use of the Rideau Canal.

Utilizing a boat-fuel consumption methodology, Staff realized that establishing a local context required formalizing what is largely a passive recreational use by estimating the amount of fuel in boats burned annually based on boat size, engine type, run time and percent throttle from a representative sample. Moreover, this representative sample, similar to the users in any other transportation energy subsector, would reflect users who may not be local Smiths Falls residents. In essence, more detailed data on the users and types of boats rented in the community would be required to gain an understanding of the GHG emissions related to waterborne navigation.

Staff at this time recommend not including this energy subsector in the transportation energy sector until more information can be gathered to assess its GHG emission contribution accurately. This is not to suggest that information from waterborne navigation is not important to understanding the Town's GHG emission production and energy consumption overall. However, in the opinion of Staff, its exclusion is considered to have a minor impact on the creation of the Climate Action Plan, as the intended corollary to its inclusion is to encourage mindful fuel consumption, which can still be done without a complete assessment of this subsector.

- *Railway*

Railways can transport people and goods and are powered by locomotive power. This typically uses energy through the combustion of diesel fuels or electricity (known as electric traction). An assessment of "induced activity" (train-related activity within the municipality) was conducted when reviewing the railway energy subsector. When assessing rail fuel consumption data, inquiries were made to Via Rail Canada and Canadian Pacific Kansas City (CPKT) rail company; however, they were less than forthcoming with data specific to Smiths Falls. Resorting to other alternatives based on

the available data for transport of people and goods, such as scaling down national railway fuel consumption based on the Town's population and other indicators as the question of scale affected how one differentiated inbound vs outbound movement. Moreover, fuel consumption data provided by both Via Rail and CPKT only provided the aggregate data at a national level or across the United States and Canada, which is less than ideal for estimating railway-related fuel consumption.

Staff recommend not including the railway energy subsector until more research can be found to accurately understand the Town's fuel consumption habits with respect to the transportation of goods and people. Moreover, in the opinion of Staff, its exclusion would not have a major impact on the creation of the Climate Action Plan, as the recommendation to support multi-modal transportation, such as railway use, would not reasonably have a direct increase in transportation-related GHG emissions.

Agriculture, Forestry and Other Land Uses

The AFOLU sector deals with agriculture, forestry, and other land uses, such as managed forests and classified wetlands. Staff have reviewed the AFOLU sector to ensure that all relevant areas of concern, such as wetlands and urban tree canopy within the context of Smiths Falls, have been adequately considered. Each applicable land use within this energy sector was reviewed and assessed for its applicability within the Milestone 1 reporting levels (i.e., Scope 1, 2 or 3).

- *Urban Tree Canopy*

Urban trees are important landscape components that provide numerous socioeconomic and biophysical benefits. In addition, they can act as a sink for CO₂, helping offset carbon emissions from urban areas by removing GHGs from the atmosphere through photosynthesis in a process called carbon sequestration. However, when assessing the Town's urban tree canopy's applicability in Milestone 1 under the AFOLU, it was discovered that the process of calculating CO₂ sequestration is not an exact science, with differing methodologies that required understanding the distribution of biomass and the tree's capacity to act as a carbon sink. In other words, it requires understanding the role of CO₂ and its relationship to tree biomass accumulation. One such process required knowing the above-ground and below-ground biomass derived from the tree's diameter.

Staff have determined at this stage that until there is more information on an appropriate and applicable tree carbon sequestration methodology, incorporating the Urban Tree Canopy into the AFOLU energy sector may inaccurately reflect the Town's Community GHG emissions. While the stewardship of the Town's urban tree canopy is of topmost importance, its inclusion without a useable methodology is not recommended and, as such, is removed from consideration at this time until further research is conducted.

- *Wetlands*

Like an urban tree canopy, wetlands sequester carbon from the atmosphere through photosynthesis and act as a sediment trap. The restoration/ management of wetlands has great potential to deliver climate change mitigation efforts through increasing carbon sequestration and storage. However, while it demonstrates great applicability in the AFOLU energy sector, as Smiths Falls has large swaths of Provincially Significant

Wetlands and other unclassified wetlands, a greater understanding of its carbon sequestration potential is required. Moreover, due to the discontinuous boundaries of wetlands, establishing appropriate boundaries is also required to categorically define it within the Milestone 1 reporting levels (i.e., Scope 1, 2 or 3). The established wetland boundaries mapping provided by the Rideau Valley Conservation Authority (RVCA) and our existing wetland mapping can be used as a starting point to explore this further.

It is important to note that unless the size and scale of the existing wetlands are diminished in any way, the GHG emissions output and carbon sequestration potential should stay the same (if everything else remains constant). As such, Staff are of the opinion that the exclusion of wetlands as a specific land use should not have a major negative effect on our assessment of our overall GHG emissions. However, to remove any doubt, Staff have concluded that more research is needed into applicable methodologies for estimating the carbon sequestration potential for the wetlands local to Smiths Falls to understand how it will be reflected in the Town's overall GHG emission production and energy consumption.

Please note that in all instances where staff recommended not incorporating certain land uses or activities within specific energy subsectors, do not assume that it may not be included in future GHG emission assessments. As the research on GHG emissions inventory assessment methodology for each applicable and appropriate land use or activity improves our understanding of GHG emissions, it will be included in future GHG emission inventories, thus bolstering our understanding of the Town's overall GHG emission production and energy consumption. Ultimately improving the Town's Climate Action Plan.

Next Steps

Milestone 2 of the PCP program involves establishing the GHG emission targets for the Climate Action Plan. An emission reduction target specifies the number of emissions the municipality aims to reduce. The proposed target is then implemented by adopting the measures outlined in the Climate Action Plan, which forms Milestone 3. A public engagement survey on the GHG emission reduction measures will be released to facilitate the GHG emission reduction targets required for Milestone 2.

Milestone 2 establishes the corporate and community emission reduction targets based on the BAU forecast determined in Milestone 1. PCP reduction targets have three components – they are expressed as a percentage reduction relative to a baseline year (2021), to be achieved by a target year (2030). For example, “the Town of Smiths Falls will aim to reduce its corporate GHG emissions by 10% below 2021 levels by 2030”. In this scenario, the Town's corporate GHG emissions were 450,000 tonnes in 2021 (the baseline year), and the target would be to reduce emissions to 350,000 tonnes by 2030.

The established targets set in Milestone 2 would then be accompanied by a series of initiatives and/or practices designed to achieve the desired outcome determined in Milestone 3. The next step will be to bring this report as an update to Council, with an outline of the next steps to provide them with an opportunity to offer direction.

Respectfully Submitted:

Original Signed

Richard Grant, Planner I

Respectfully and Approved:

Original Signed

Karl Grenke RPP, MCIP

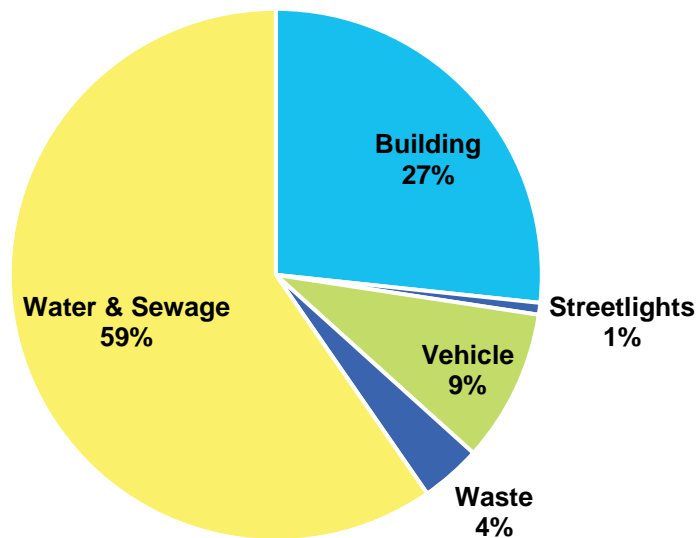
Manager of Development Services

Appendix 'A' – Corporate Data Emissions Tables and BAU Forecast (2021)

TABLE 1: CORPORATE GHG EMISSIONS TABLE BY SECTOR AND ENERGY PRODUCTION
Greenhouse gas emissions (tCO₂e) by sector

Sector	Emissions (tCO₂e)	Energy (GJ)
<i>Building</i>	455.32	13022
<i>Streetlights</i>	12.25	1550
<i>Vehicle</i>	158.35	2392
<i>Waste</i>	62.88	N/A
<i>Water & Sewage</i>	1017.67	32539

Corporate GHG Emissions (tCO₂e) by Sector



Corporate Energy Use (GJ) by Sector

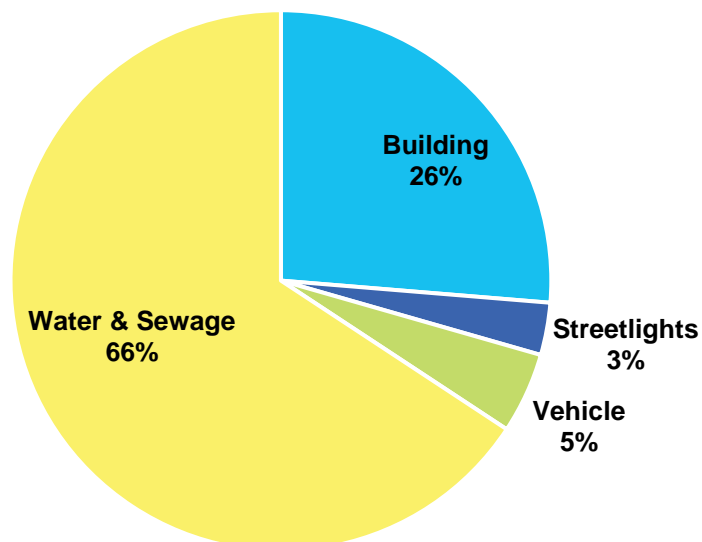
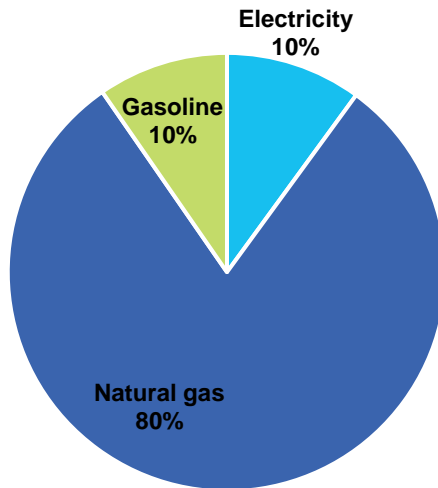


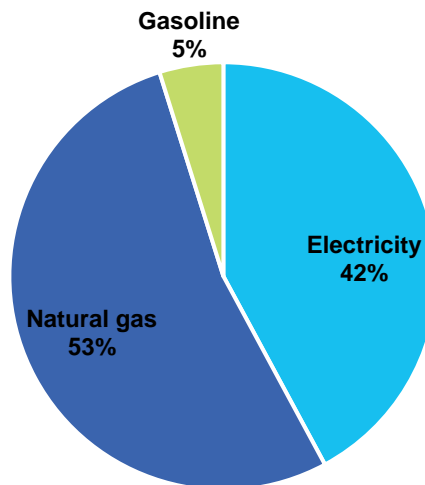
TABLE 2: CORPORATE GHG EMISSIONS TABLE BY GHG PRODUCED AND FUEL TYPE

<i>Source</i>	<i>Energy (GJ) by source</i>	
	Emissions (tCO2e)	Energy (GJ)
<i>Electricity</i>	164.94	20854
<i>Natural gas</i>	1320.3	26257
<i>Gasoline</i>	158.35	2392

Corporate Emissions (tCO2e) Generated by Energy Use by Fuel Type

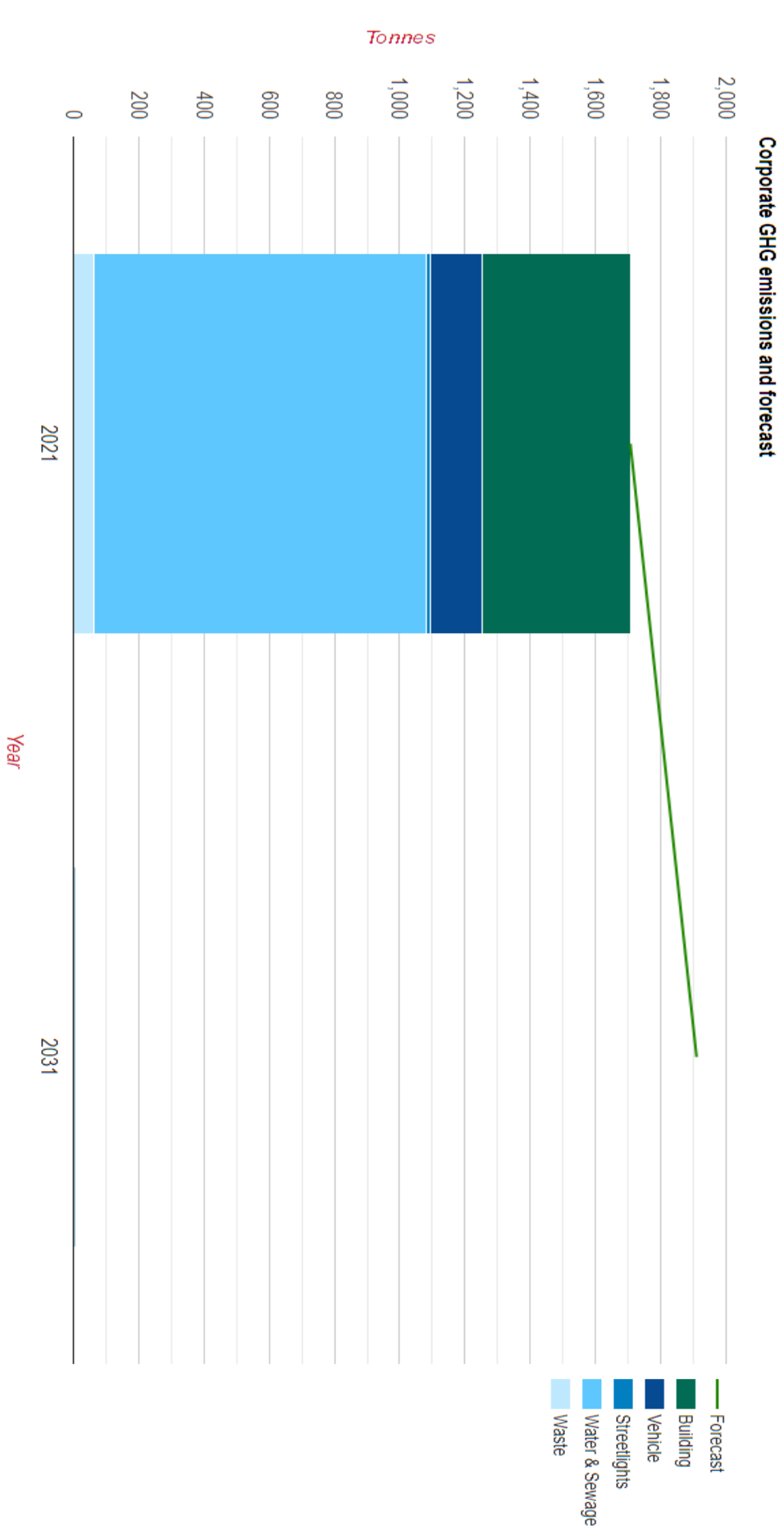


Energy (GJ) Procued from GHG Emissions by Sector



Appendix 'A' – Corporate Data Emissions Tables and BAU Forecast (2021)

- ▶ Emissions
- Energy
- Expenditure



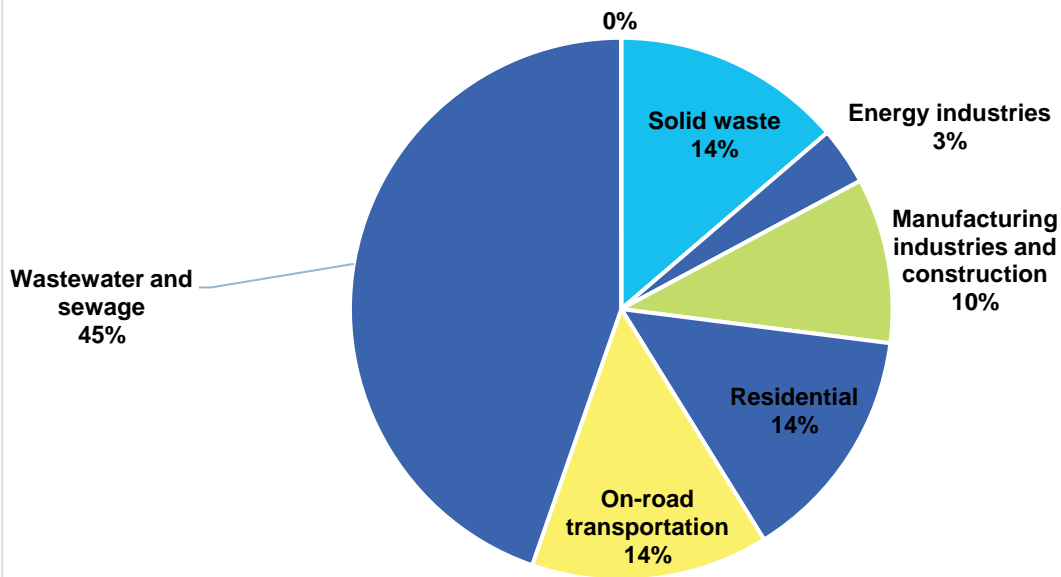
Appendix B- Community Data Emissions Tables and BAU Forecast (2021)

TABLE 3: COMMUNITY EMISSIONS INVENTORY BY GHG EMISSIONS (tCO₂e) AND ENERGY (GJ) PRODUCTION

Greenhouse gas emissions (tCO₂e) by sector

Sector	Emissions (tCO₂e)	Energy (GJ)
<i>Commercial and Institutional</i>	14463.42	585377
<i>Solid waste</i>	3618	N/A
<i>Manufacturing industries and construction</i>	10381.96	504206
<i>Residential</i>	14919.27	423058
<i>On-road transportation</i>	47071.32	710671
<i>Wastewater and sewage</i>	0.83	N/A

Community GHG Emissions (tCO₂e) by Sector



Community Energy Use (GJ) by Sector

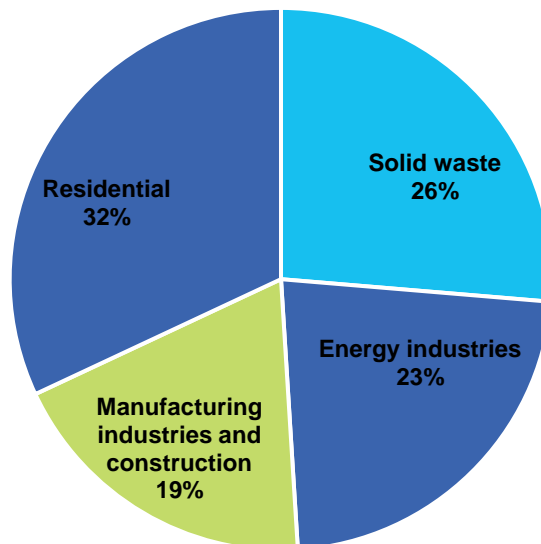
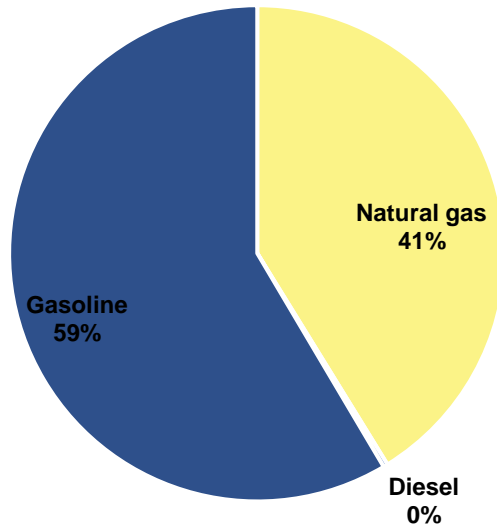


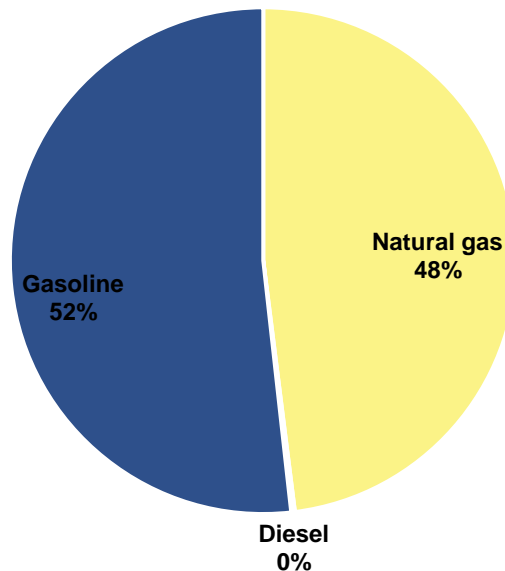
TABLE 4: COMMUNITY GHG EMISSIONS TABLE BY GHG PRODUCED AND FUEL TYPE

Source	Emissions (tCO ₂ e)	Energy (GJ)
Natural gas	32990.09	656095
Diesel	228.66	3187
Gasoline	46842.66	707484

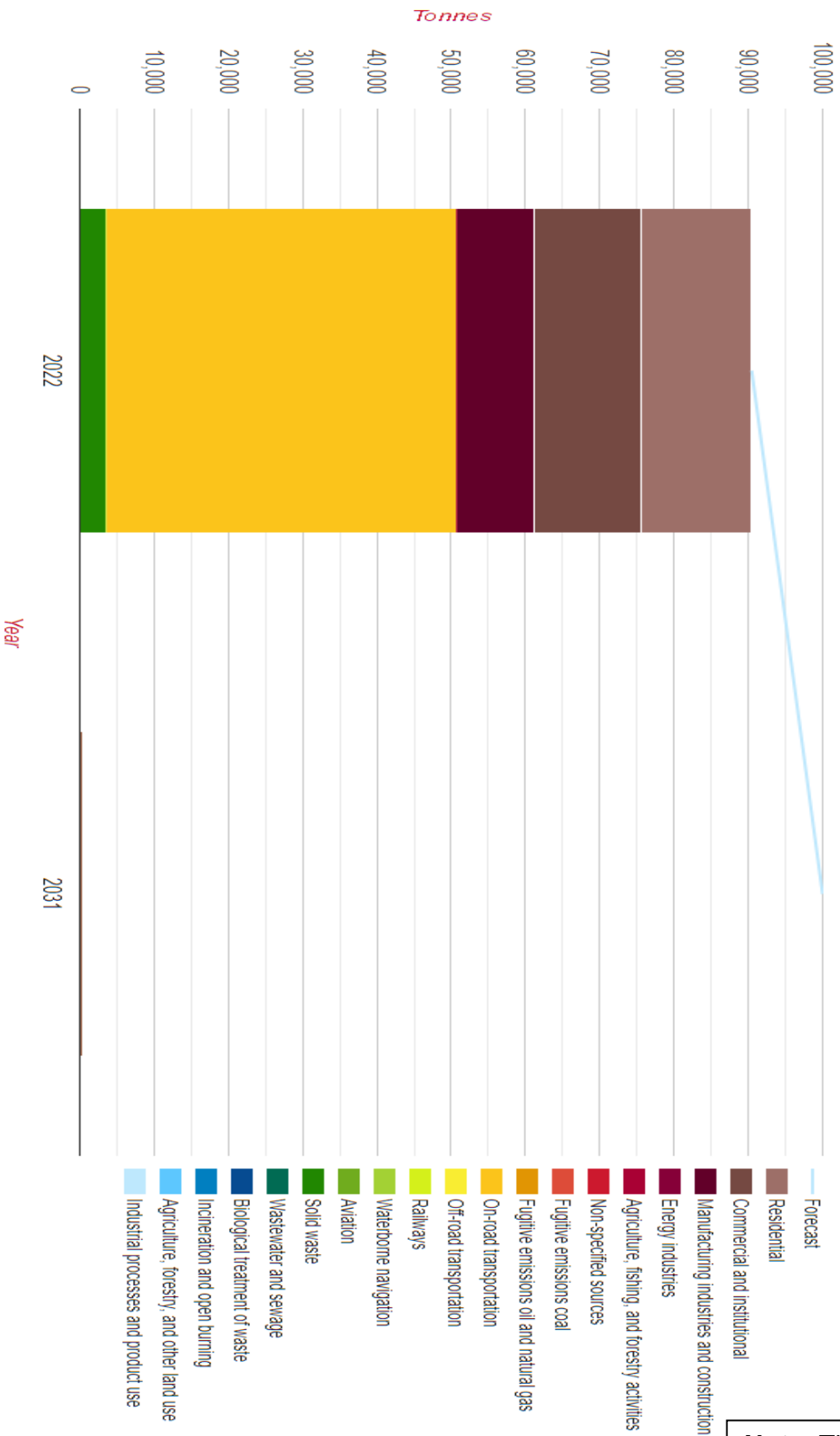
Community Emissions (tCO₂e) Generated by Energy Use by Fuel Type



Energy (GJ) Produced from GHG Emissions Generated by Fuel Type



Community GHG emissions and forecast



Note: The Community BAU graph will be updated with the correct baseline year. The 10-year completion timeline and forecast should not be impacted.