# City of McCall

## RESOLUTION 23-26

A RESOLUTION OF THE CITY OF MCCALL, IDAHO, ADOPTING THE MCCALL INVENTORY OF COMMUNITY GREENHOUSE GAS EMISSIONS (2023), PROVIDING FOR RELATED MATTERS, AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, in 2019, the City received a Grant from Blue Cross of Idaho Foundation for Health in response to the Mayor having participated in their leadership program to partner with MOSS students to create an internship studying Climate Action in McCall.

WHEREAS, in 2019, intern Anna Lindquist conducted surveys, collected data, performed interviews and produced *McCall's Framework for Climate Action Planning* and *Draft 2018 Greenhouse Gas Emission Inventories*; and

WHEREAS, the results of the *Draft 2018 Greenhouse Gas Emissions Inventories* and *McCall's Framework for Climate Action Planning* reports assist the City and the community in developing a baseline to measure follow-up Greenhouse Gas Emissions and set a framework for developing a Climate Action Plan; and

WHEREAS, in 2023, staff conducted follow-up Greenhouse Gas Emissions Inventories at the Community-wide and Local Government Operations levels covering the 2021 Calendar Year, to assess changes and complete missing components of the *Draft 2018 Greenhouse Gas Emissions Inventories*; and

WHEREAS, throughout 2023, staff partnered with International Council for Local Environmental Initiatives (ICLEI) – Local Governments for Sustainability, a non-profit assisting local governments to quantify environmental impacts, to develop the custom Greenhouse Gas Inventories Report and learn best-practices for analysis; and

WHEREAS, the Adoption of the *McCall Inventory of Community Greenhouse Gas Emissions (2023)* will provide data to inform a future Climate Action Plan.

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and City Council of the City of McCall, Valley County, Idaho that:

Section 1: the *McCall Inventory of Community Greenhouse Gas Emissions (2023)* is adopted, and a copy of the Plan is attached hereto as Exhibit 1, and by this reference incorporated herein.

Section 2: This resolution shall be in full force and effect upon its passage and approval.

PASSED AND APPROVED BY THE MAYOR AND THE CITY COUNCIL of the City of McCall, Valley County, Idaho, this 28 day of December 2023.

CITY OF MCCALL, a municipal corporation of the State of Idaho

Robert S. Giles

Robert S. Giles, Mayor

ATTEST:

BessieJo Wagner, City Clerk

EXHIBIT 1

City of McCall IDAHO

# CITY OF MCCALL, IDAHO

## 2021 Inventory of Community Greenhouse Gas Emissions

**Prepared For:**

City of McCall, Idaho

**Produced By:**

ICLEI – Local Governments for Sustainability USA
December 2023

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**ICLEI – Local Governments for Sustainability USA**
This template was updated by ICLEI USA in 2023.

# Tables and Figures

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# Executive Summary

The City of McCall recognizes that greenhouse gas (GHG) emissions from human activity are catalyzing profound climate change, the consequences of which pose substantial risks to the future health, wellbeing, and prosperity of our community. As a community with a deep relationship and reliance on the natural environment and recreation amenities, McCall plays a key role in addressing this challenge with the urgency and creativity required for current and future generations.

Since 2018 when McCall first measured emissions from the community, McCall City Council has adopted McCall's Framework for Climate Action Planning (2020) and 2018 Base year Inventory, converted all community streetlights to LED bulbs, decarbonized the municipal golf-course greens mowers, upgraded municipal building envelopes and HVAC systems to increase public energy-efficiency, trained staff on GHG accounting and analysis, completed this second, follow-up GHG Inventory, and has committed to pursuing the first McCall Community-wide Climate Action Plan, kicking off in 2024. This report provides estimates of GHG emissions resulting from activities in the McCall Community as a whole in 2021, and reflects on changes in community GHG emissions since the first inventory conducted in 2018.

While these actions are small in comparison to the changes, adaptations, and new ways of being that will be crucial to reducing emissions and McCall's impact on the changing climate, they were steps necessary to learn what must be done to act locally towards resilience at the global level.

# Key Findings: Community-Wide Inventory

Figure 1 shows community-wide emissions by sector. The largest contributor is Transportation with 52% of emissions. The next largest contributors are Residential Energy (26%) and Commercial Energy (17%). Actions to reduce emissions in all of these sectors will be a key part of a climate action plan. Solid Waste, Water & Wastewater, and AFOLU were responsible for the remaining with 7% of emissions.

The Inventory Results section of this report provides a detailed profile of emissions sources within the City of McCall; information that is key to guiding local reduction efforts. These data will also provide a baseline against which the city will be able to compare future performance and demonstrate progress in reducing emissions.

## COMMUNITY EMISSIONS AT A GLANCE

1 **Transportation**
52%

2 **Residential Energy**
26%

3 **Commercial Energy**
17%

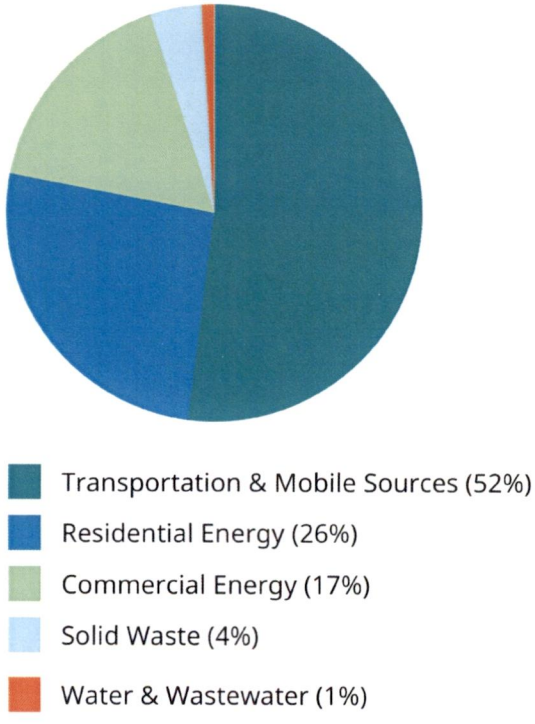



**Figure 1: Community-Wide Emissions by Sector**

# Key Findings: Government Operations Inventory

Figure 2 shows government operations emissions by sector. The largest contributor is the Municipal Fleet and Equipment Fuel (Snowplowing) with 32.4% of emissions. The next largest contributors are Water & Wastewater (27.9%) and Buildings & Facilities (27.1%). Actions to reduce emissions in all of these sectors will be a key part of a climate action plan.

Emissions from municipal government operations contribute to 1.6% of McCall's community-wide emissions.

## GOVERNMENT OPERATIONS EMISSIONS AT A GLANCE

1 **Vehicle Fleet & Equipment**
32.4%

2 **Water & Wastewater**
27.9%

3 **Buildings & Facilities**
27.1%

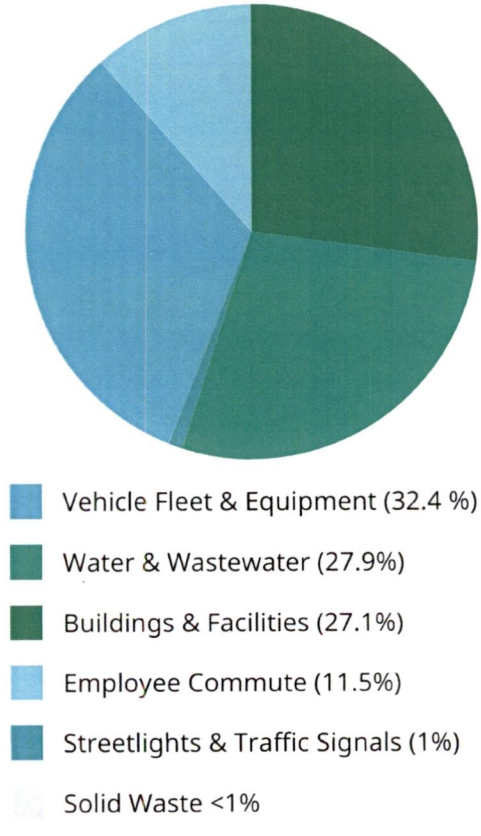
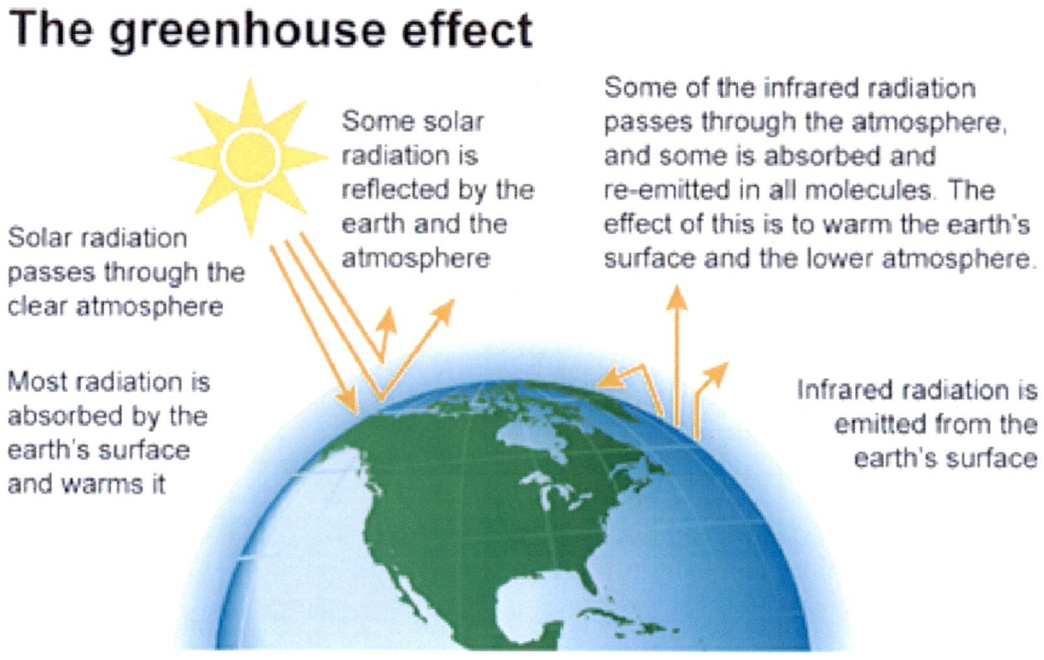



**Figure 2: 2021 Government Operations Emissions by Sector**

# Introduction to Climate Change

Naturally occurring gases dispersed in the atmosphere determine the Earth's climate by trapping solar radiation. This phenomenon is known as the greenhouse effect. Overwhelming evidence shows that human activities are increasing the concentration of greenhouse gases and changing the global climate. The most significant contributor is burning fossil fuels for transportation, electricity generation, and other purposes, which introduces large amounts of carbon dioxide and other greenhouse gases into the atmosphere.

Collectively, these gases intensify the natural greenhouse effect, causing global average surface and lower atmospheric temperatures to rise, threatening the safety, quality of life, and economic prosperity of global communities. Although the natural greenhouse effect is needed to keep the Earth warm, a human-enhanced greenhouse effect with the rapid accumulation of GHGs in the atmosphere leads to too much heat and radiation being trapped. The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report confirms that human activities have unequivocally caused an increase in carbon emissions [1]. Many regions are already experiencing the consequences of global climate change, and McCall is no exception.




[1] IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [MassonDelmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

Regional studies have shown that Idaho can expect increasing temperatures and changing precipitation patterns in the years to come. Specifically, we can anticipate an increasing growing-season length, increasing areas burned by wildfires, and more precipitation falling as rain instead of snow. Natural resource managers in the state are increasingly concerned about water resource availability, extreme drought, more wildland fires, and changes in plant productivity [2].

In McCall, however, our relationship to wildfire on the landscape is not a story that began with the changing climate. Wildland firefighters have been a part of our community since the early 1900's and the McCall Smokejumpers have been in operation since 1943. The US Forest Service, state fire managers, and local fire districts respond quickly and strategically to wildfires as they occur, as well as plan for and implement prescribed burning to maintain optimal forest and community health [3].

In 2022, the US Forest Service launched a robust strategy to address the wildfire crisis in places where it poses the most immediate threats to communities and Valley County was identified as one of the highest-risk landscapes. As part of that effort, the Southwest Idaho Wildfire Crisis Landscape Project was created, which is a broadscale effort to reduce the risk of catastrophic and undesirable wildfire while increasing the resiliency of the landscape to climate change and other stressors. The project encompasses 1.7 million acres, including about 424,000 and 505,000 acres of the Boise and Payette National Forests, respectively. There are another 800,000 acres of other ownership including private, state and other federal lands. Land managers will utilize treatments based on sound science, including prescribed fire, non-commercial thinning, commercial thinning, and reforestation [3].


[2] Lindquist, A. (2019, January). Draft 2018 greenhouse gas emissions inventories - mccall.id.us. https://www.mccall.id.us/media/CED/Plans/Draft%20Greenhouse%20Gas%20Emissions%20Inventories_2018.pdf

[3] Southwest Idaho Landscape Project. (2023, September 26). ArcGIS StoryMaps. https://storymaps.arcgis.com/stories/326b883b9d1b46498435a2a904a937d1

As a place where people value a high quality of life, and as a destination for outdoor recreation, McCall is in danger of being deeply affected because of climate change. McCall depends on snowpack not only for its water, but also for winter recreation, which brings an economic boost to the region. Yet, overall snowpack in Idaho has been decreasing in the past few decades. Thus, in the future the region may experience a shorter skiing and winter tourism season. This decrease in snowpack is also detrimental to another key feature of McCall, Payette Lake, which is a natural lake fed by spring flow from the mountains. With rising temperatures, however, spring runoff will peak sooner, leading to reduced flow in the summer, potentially affecting agriculture downstream, as well as the flora and fauna that depend on the lake. This change in water variability, coupled with rising temperatures, has the potential to exacerbate the already visible effects of drought heat in area forests. This is because a decrease in snowpack reduces the water supply to forest ecosystems. An increase in unhealthy forests means more fuel for wildfires, which are also correlated with decreased soil moisture and rising temperatures.

Finally, the health effects of climate change may also shift in the McCall area. Increasing temperatures and more particulate matter in the air due to wildfires, may result in the most vulnerable citizens, such as seniors, wildland firefighters, and young children, being disproportionately affected.

Many communities in the United States have started to take responsibility for addressing climate change at the local level. Reducing fossil fuel use in the community can have many benefits in addition to reducing greenhouse gas emissions. More efficient use of energy decreases utility and transportation costs for residents and businesses. Retrofitting homes and businesses to be more efficient creates local jobs. In addition, when residents save on energy costs, they are more likely to spend at local businesses and add to the local economy. Reducing fossil fuel use improves air quality, and increasing opportunities for walking and bicycling improves residents' health.

# Greenhouse Gas Inventory as a Step Toward Carbon Neutrality

Facing the climate crisis requires the concerted efforts of local governments and their partners, those that are close to the communities directly dealing with the impacts of climate change.

Cities, towns and counties are well placed to create detailed plans that address integrated climate action — climate change adaptation, resilience, and mitigation. Existing targets and plans need to be reviewed to bring in the necessary level of ambition and outline how to achieve net-zero emissions by 2050 at the latest. Creating a roadmap for climate neutrality requires McCall to identify priority sectors for action, while considering climate justice, inclusiveness, local job creation, and other benefits of sustainable development.

To complete this inventory, McCall utilized tools and guidelines from ICLEI - Local Governments for Sustainability (ICLEI), which provides authoritative direction for greenhouse gas emissions accounting and defines climate neutrality as follows:

> The targeted reduction of greenhouse gas (GHG) emissions and GHG avoidance in government operations and across the community in all sectors to an absolute net-zero emission level at the latest by 2050. In parallel to this, it is critical to adapt to climate change and enhance climate resilience across all sectors, in all systems and processes.

To achieve ambitious emissions reduction and move toward climate neutrality, McCall will need to set clear goals and act rapidly, following a holistic and integrated approach. Climate action is an opportunity for our community to experience a wide range of co-benefits, such as creating socio-economic opportunities, reducing poverty and inequality, and improving the health of people and nature (Figure 3).

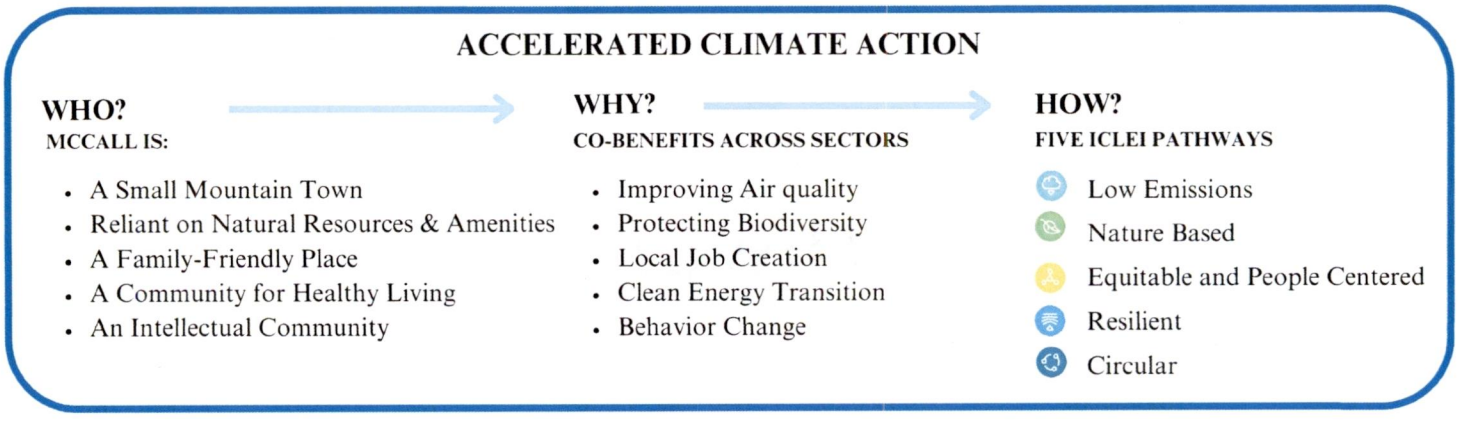



**Figure 3: Accelerated Climate Action through McCall Comprehensive Plan Goals, Co-Benefits, and ICLEI Pathways**

# ICLEI Climate Mitigation Milestones

In response to the climate emergency, many communities in the United States are taking responsibility for addressing emissions at the local level. Since many of the major sources of greenhouse gas emissions are directly or indirectly controlled through local policies, local governments have a strong role to play in reducing greenhouse gas emissions within their boundaries, as well as influencing regional emissions through partnerships and advocacy. Through proactive measures around land use patterns, transportation demand management, energy efficiency, green building, waste diversion, and more, local governments can dramatically reduce emissions in their communities. In addition, local governments are primarily responsible for the provision of emergency services and the mitigation of natural disaster impacts.

ICLEI provides a framework and methodology for local governments to identify and reduce greenhouse gas emissions, organized along with Five Milestones, also shown in Figure 4:

1. Conduct an inventory and forecast of local greenhouse gas emissions;
2. Establish a greenhouse gas emissions Science-Based Target [4];
3. Develop a climate action plan for achieving the emissions reduction target;
4. Implement the climate action plan; and,
5. Monitor and report on progress.

This report represents the completion of ICLEI's Climate Mitigation Milestone One, and provides a foundation for future work to reduce greenhouse gas emissions in McCall.


**Figure 4: ICLEI Climate Mitigation Milestones**

[4] Science-Based Targets are calculated climate goals, in line with the latest climate science, that represent your community's fair share of the ambition necessary to meet the Paris Agreement commitment of keeping warming below 1.5°C. To achieve this goal, the Intergovernmental Panel on Climate Change (IPCC) states that we must reduce global emissions by 50% by 2030 and achieve climate neutrality by 2050. Equitably reducing global emissions by 50% requires that high-emitting, wealthy nations reduce their emissions by more than 50%.

# Inventory Methodology

## Understanding a Greenhouse Gas Emissions Inventory

The first step toward achieving tangible greenhouse gas (GHG) emission reductions requires identifying baseline emissions levels and sources and activities generating emissions in the community. This report presents emissions from the community as a whole. The government operations inventory is mostly a subset of the community inventory, as shown in Figure 5. For example, data on commercial energy use by the community include energy consumed by municipal buildings and community vehicle-miles-traveled estimates include miles driven by municipal fleet vehicles.


**Figure 5: Relationship of Community and Government Operations Inventories**

As local governments continue to join the climate protection movement, the need for a standardized approach to quantify GHG emissions has proven essential. This inventory uses the approach and methods provided by the U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions (Community Protocol) and the Local Government Operations Protocol for Accounting and Reporting Greenhouse Gas Emissions (LGO Protocol), both of which are described below.

Three greenhouse gases are included in this inventory: carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). Many of the charts in this report represent emissions in "carbon dioxide equivalent" (CO2e) values, calculated using the Global Warming Potentials (GWP) for methane and nitrous oxide from the IPCC 6th Assessment Report (Figure 6).

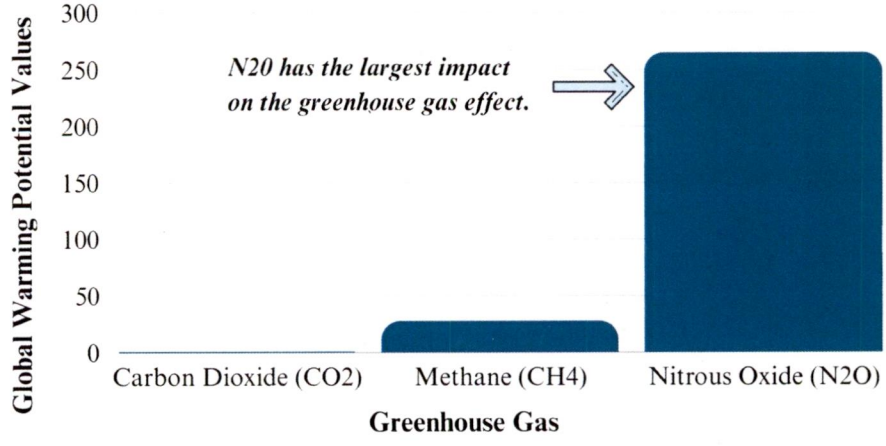



**Figure 6: Global Warming Potential Values (IPCC, 2023)**

# Community Emissions Protocol

Version 1.2 of the U.S. Community Protocol for Accounting and Reporting GHG Emissions [5] was released by ICLEI in 2019, and represents a national standard in guidance to help U.S. local governments develop effective community GHG emissions inventories. It establishes reporting requirements for all community GHG emissions inventories, provides detailed accounting guidance for quantifying GHG emissions associated with a range of emission sources and community activities, and provides a number of optional reporting frameworks to help local governments customize their community GHG emissions inventory reports based on their local goals and capacities.

The community inventory in this report includes emissions from the various activities:

**Use of electricity by the community**



**Use of fuel in residential and commercial stationary combustion equipment**

**On-road passenger and freight motor vehicle travel**

**Use of energy in potable water and wastewater treatment and distribution**

**Generation of solid waste by the community**

**Wastewater treatment processes**

**Off-road transportation**

**Industrial processes**


**Carbon sequestration emissions and removals**



**Upstream activities**

**Municipal operations fleet**

# Local Government Operations (LGO) Protocol

In 2010, ICLEI and its research partners released Version 1.1 of the LGO Protocol [6]. The LGO Protocol serves as the national standard for quantifying and reporting greenhouse emissions from local government operations. The purpose of the LGO Protocol is to provide the principles, approach, methodology, and procedures needed to develop a local government operations greenhouse gas emissions inventory.

The following activities are included in the LGO inventory:

- Energy and natural gas consumption from buildings & facilities
- Water treatment processes
- On-road transportation from employee commute and vehicle fleet

[5] ICLEI. 2012. US Community Protocol for Accounting and Reporting Greenhouse Gas Emissions. Retrieved from http://www.icleiusa.org/tools/ghg-protocol/community-protocol

[6] ICLEI. 2008. Local Government Operations Protocol for Accounting and Reporting Greenhouse Gas Emissions. Retrieved from http://www.icleiusa.org/programs/climate/ghg-protocol/ghg-protocol

# Quantifying Greenhouse Gas Emissions

## *Sources and Activities*

Communities contribute to greenhouse gas emissions in many ways. Two central categorizations of emissions are used in the community inventory: 1) GHG emissions that are produced by "sources" located within the community boundary, and 2) GHG emissions produced as a consequence of community "activities."

**Table 1: Source vs. Activity for Greenhouse Gas Emissions (GHG)**

| Source | Activity |
|---|---|
| Any physical process inside the jurisdictional boundary that releases GHG emissions into the atmosphere. | The use of energy, materials (solid waste), and/or services by members of the community that result in the creation of GHG emissions. |

Activities within a community include, but are not limited to: heating of homes, driving cars, and throwing away trash. Sources are where the emissions from those activities occur, which may or may not be the same place the activity occurs. When you drive your car, the source is the car's tailpipe. Similarly, when a gas furnace in your home runs, the source is the exhaust vent of the furnace. On the other hand, when you throw away trash, the source is the landfill the trash is sent to. When you flip a switch and use electricity, the source is the power plant where the electricity is generated. Because landfills and power plants are usually located outside the community, careful inclusion of both sources and activities provides a fuller picture of community emissions.

## *Base Year*

The inventory process requires the selection of a base year with which to compare current emissions. McCall's LGO greenhouse gas emissions inventory utilizes 2018 as its baseline year because it is the most recent year for which the necessary data are available.

## *Quantification Methods*

GHG emissions can be quantified in two ways:

- Measurement-based methodologies refer to the direct measurement of GHG emissions (from a monitoring system) emitted from a flue of a power plant, wastewater treatment plant, landfill, or industrial facility.
- Calculation-based methodologies calculate emissions using activity data and emission factors. To calculate emissions accordingly, the basic equation below is used:

**Activity Data x Emission Factor = Emissions**

Most emissions sources in this inventory are quantified using calculation-based methodologies. Activity data refer to the relevant measurement of energy use or other GHG-generating processes such as fuel consumption by fuel type, metered annual electricity consumption, and annual vehicle miles traveled. Please see the appendices for a detailed listing of the activity data used in composing this inventory.

Known emission factors are used to convert energy usage or other activity data into associated quantities of emissions. Emissions factors are usually expressed in terms of emissions per unit of activity data (e.g. lbs CO2/kWh of electricity). For this inventory, calculations were made using ICLEI's ClearPath Climate Planner tool.

# Community Emissions Inventory Results

The total community-wide emissions for the 2021 inventory are shown in Table 2 and Figure 7.

**Table 2: Community-Wide Emissions Inventory**

| Sector | Fuel or Source | 2021 Usage | Usage Unit | 2021 Emissions (Mt CO2e) |
|---|---|---|---|---|
| Residential Energy | Electricity | 55,576,862 | kWh | 21,195 |
| | Distillate Fuel Oil No. 2 | 2,158 | MMBtu | 161 |
| | Propane | 31,503 | MMBtu | 1,955 |
| | Wood | 63,479 | MMBtu | 618 |
| **Residential Energy Total** | | | | **23,930** |
| Commercial Energy | Electricity | 38,152,110 | kWh | 14,550 |
| | Distillate Fuel Oil No. 2 | 13,115 | MMBtu | 976 |
| | Propane | 1,926 | MMBtu | 120 |
| | Wood | 18,343 | MMBtu | 179 |
| | Coal | 2,843 | MMBtu | 273 |
| **Commercial Energy Total** | | | | **16,097** |
| Transportation & Mobile Sources | Gasoline | 68,290,357 | VMT | 27,536 |
| | Diesel | 8,159,189 | VMT | 11,752 |
| | Public Transit - Gasoline | 128,073 | VMT | 138 |
| | Public Transit - Diesel | 82,500 | VMT | 84 |
| | Aviation - Jet Kerosene | 173,439 | Gallons | 1,108 |
| | Aviation - AvGas | 92,834 | Gallons | 774 |
| | Off-Road - Gasoline | 219015.268 | MMBtu | 5,467 |
| | Off-Road - Diesel | 60918.674 | MMBtu | 1,561 |
| | Offroad - CNG | 248.106 | MMBtu | 6 |
| | Offroad - LPG | 1277.100 | MMBtu | 27 |
| **Transportation & Mobile Sources Total** | | | | **48,452** |

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

**Table 2: Community-Wide Emissions Inventory (continued)**

| Sector | Fuel or Source | 2021 Usage | Usage Unit | 2021 Emissions (Mt CO2e) |
|---|---|---|---|---|
| Solid Waste | Landfilled Waste - Lakeshore Disposal | 4,256 | Tons | 3,774 |
| **Solid Waste Total** | | | | **3,774** |
| Water & Wastewater | Supply of Potable Water - Electricity | 1,240,361 | kWh | 473 |
| | Watewater Treatment Energy Use | 1,316,299 | kWh | 502 |
| | Wastewater Treatment Process N2O | 4,188 | Population Served | 8 |
| | Process N2O from Effluent Discharge | 351 | Population Served | 21 |
| **Water & Wastewater Total** | | | | **1,004** |
| **Total Gross Emissions** | | | | **93,257** |
| Forests and Trees | Forest Disturbances | 20 | Hectares | 1,987 |
| | Forest to Grassland | 3 | Hectares | 110 |
| **Forests and Trees Total** | | | | **2,097** |
| **Emissions with Forest Disturbances** | | | | **95,354** |

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

Figure 7 shows the distribution of community-wide emissions by sector. Transportation is the largest contributor, followed by Residential & Commercial Energy.

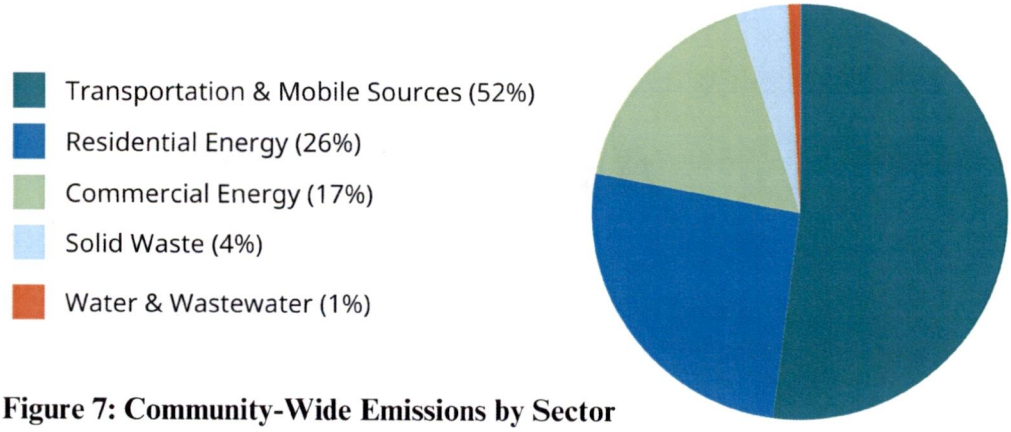



**Figure 7: Community-Wide Emissions by Sector**

**Table 3: 2018 and 2021 Primary Community-Wide Emissions Comparison**

| Sector | Fuel or Source | 2018 Usage | 2021 Usage | 2018 Emissions (MT CO2e) | 2021 Emissions (MT CO2e) | Percent Change in Emissions |
|---|---|---|---|---|---|---|
| Residential | Electricity | 34,945,246 | 55,373,908 | 10,544 | 21,195 | **101.02%** |
| | Fuel Oil | 2,031 | 2,158 | 151 | 161 | 6.30% |
| | Propane | 29,641 | 31,503 | 1,840 | 1,955 | 6.28% |
| | Wood | 59,727 | 63,479 | 582 | 618 | 6.28% |
| Commercial | Electricity | 53,229,990 | 37,877,990 | 16,061 | 14,550 | -9.41% |
| On-Road Transportation | On Road - Gasoline | 64,254,396 | 68,290,357 | 26,832 | 27,536 | 2.5% |
| | On Road - Diesel | 7,676,356 | 8,159,189 | 11,046 | 11,752 | 6% |
| | Treasure Valley Public Transit - Gasoline | 310 | 128,073 | 3 | 138 | 49.78% |
| | Treasure Valley Public Transit Diesel | 19,804 | 82,500 | 202 | 84 | -0.59% |
| | Aviation - AvGas | 92,834 | 92,834 | 774 | 774 | 0% |
| | Aviation - Jet Kerosene | 173,439 | 173,439 | 1,108 | 1,108 | 0% |
| Waste | Landfilled Waste - Lakeshore Disposal | 3955.82 | 4,256 | 3,939 | 3,774 | -4.19% |
| Water & Wastewater | Supply of Potable Water - Electricity | 1,410,098 | 1,240,361 | 425 | 473 | **11.30%** |
| | Payette Lakes Wastewater Treatment - Electricity | 983,280 | 1,316,299 | 297 | 502 | **69.20%** |
| **Total** | | | | **73,657** | **84,620** | **+ 12.7%** |

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

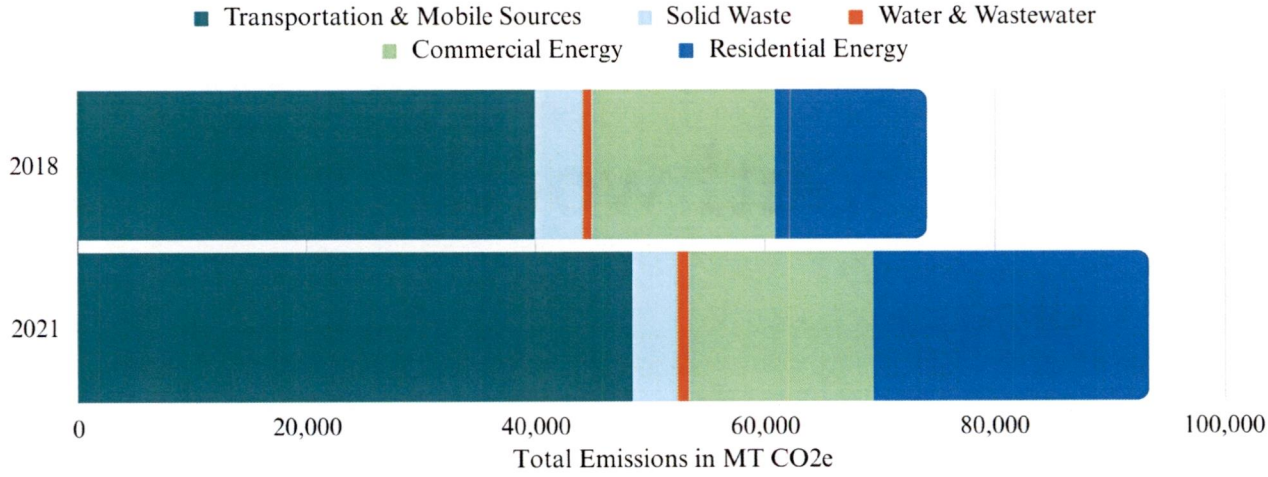



**Figure 8: Comparison of Community-Wide Emissions by Sector and Year (2018 & 2021)**

# Comparison Discussion Community-Wide (2018 & 2021)

The above table compares 2018 and 2021 activity data and emissions (MT CO2e). When comparing inventories 3 years apart, it must be recognized that the data collection and the inventory process could have been conducted differently. Most notably, data collection methodologies since 2018 have become more accurate. The various patterns and outliers displayed in the above table might be partly based on the aforementioned inventory changes.

In conducting this 2021 Inventory follow-up, the goal was to measure what the changes to McCall's emissions would look like from before and after the Covid-19 pandemic and related boom in local tourism, local land use development, and local energy consumption that came with an influx of visitors and constant stream of temporary residents seeking to enjoy McCall's natural amenities.

Since 2018 the community has seen the new construction of more than 200 household units, predominantly large, single-family homes. The influx of development of this style has also driven and exacerbated challenges to workforce housing, potentially displacing many long-term residents and workforce members into housing further outside of the community with longer commuting required which leads to increases in on-road transportation emissions. We can see the nuanced impacts of this growth in key indicators within the 2021 Inventory such as: Residential Energy Use, Transportation, and demand for Water and Wastewater Infrastructure.

# Tree Canopy Analysis
# A Message from Our City Arborist

The manner in which GHG inventories are estimated for different types of land use is more complicated than for other sectors. In addition to both emitting and removing GHGs, there are multiple carbon pools that respond differently to management activities and natural disturbances, inter-annual variability is high, and measurements may not be as precise as it is in other sectors (see the USCP, Appendix J). Beginning in 2019, a number of updates to protocols and guidance on estimating carbon from the *Agriculture, Forestry, and Other Land Use (AFOLU)* sector required that communities include the "net flux" of carbon emissions and removals - carbon emitted to the atmosphere from the land and carbon removed from the atmosphere to the land.

In coordination with ICLEI USA, McCall was able to use the US Community Protocol's Land Emissions And Removals Navigator (LEARN) tool to calculate the net flux of AFOLU emissions from 2013-2019 [7]. This analysis reported six "land use" categories which were defined by data on land cover—forest land, grassland, cropland, wetland, settlement and other land (barren). In 2019, McCall's total land base was approximately 6,333 acres (9.9 square miles), with nearly 37.0% Settlement (i.e. developed areas of varying intensity), around 31.5% forest, 22.1% Grassland (which includes hay/pasture, shrub/scrub and other herbaceous cover), 7.7% cropland, 3.4% wetland and 0.5% other land. 2019 is the most recent year available of the National Land Cover Dataset. These measurements are only for trees, so carbon sequestration from other vegetation, such as grassland, likely mean that what is measured by the LEARN tool is actually an underestimate of total sequestration for the community sectors.

Over the period 2016 to 2019, the Net GHG balance of forests and trees was -3,349 Mt CO2e per year, however this sequestration should be considered informational in nature, only. Total GHG emissions for McCall across all sectors could be reduced if additional forests/trees were added to its land base, and/or if losses of trees were reduced further by:

- Replacement of all lost or removed trees through city code
- Ongoing protection and maintenance of shoreline, public and street trees
- Outreach and management of arborist services through adequate business licensing

[7] US Community Protocol's Land Emissions And Removals Navigator (LEARN) tool. Available at https://icleiusa.org/LEARN/

# Next Steps - Community-Wide

The inventory should be used to focus and prioritize actions to reduce emissions and inform the future Community-wide Climate Action Plan for McCall. Based on the inventory results, the following areas have the greatest potential for emissions reduction at the community level:

- Residential Energy
- Commercial Energy
- On-Road Transportation

  High level VMT reduction - Reduce parking minimums, improve bike infrastructure, increase public transit and active transportation access, and implement other measures to reduce dependency on on-road vehicle transportation

Completing another GHG inventory every two to five years is recommended to assess progress resulting from any actions implemented. The detailed methodology section of this report, as well as notes and attached data files in the ClearPath Climate Planner tool and a master data Excel file provided to McCall, will be helpful in completing a future inventory consistent with this one.

# Greenhouse Gas Emissions Forecasts

McCall's most recent community-wide greenhouse gas (GHG) inventory includes emissions from activities and sources that took place within the city during the 2021 calendar year. Using the 2021 GHG inventory as a baseline, ICLEI prepared a basic "business-as-usual" forecast for 2030.

## Business-As-Usual (BAU) Forecast

The BAU forecast (Figure 9) is a projection of emissions through the year 2050. The projected emissions estimated population growth, changes in automotive fuel efficiency standards [8], and changes to the carbon intensity of grid electricity [9].

McCall's 2021 emissions were 93,715 Metric Tons Carbon Dioxide equivalent (MT CO2e). Based on expected population growth, increasing on-road vehicle fuel efficiency, and utility decarbonization plans, McCall's 2030 emissions will be 94,383 CO2e. This is a 1% increase in emissions.

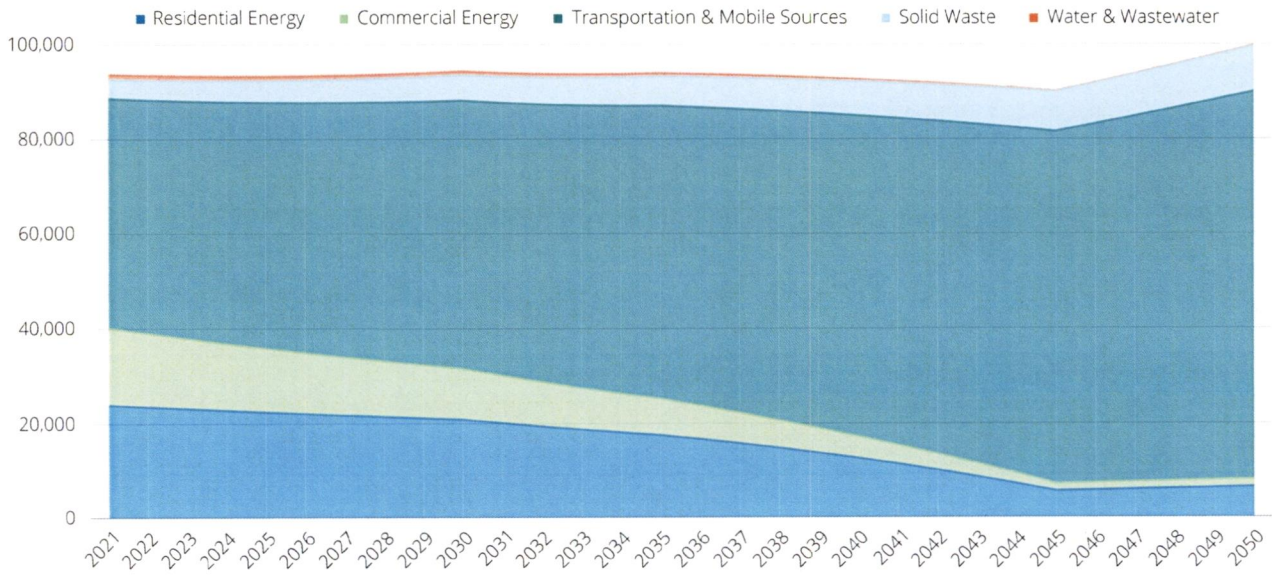



**Figure 9: Business-As-Usual Forecast for Community-Wide Emissions from 2021-2050**

[8] ICLEI's Carbon Intensity Reference Sheet

[9] "Our Path Away from Coal". Idaho Power, 2023. https://www.idahopower.com/energy-environment/energy/energy-sources/our-path-away-from-coal/#:~:text=Our%20Clean%20Today%2C%20Cleaner%20Tomorrow,by%20the%20end%20of%202028.

# Government Operations Emissions Inventory 2021 Results

The total government operations emissions for the 2021 inventory are shown in Table 4 and Figure 10.

**Table 4: Government Operations Emissions Inventory 2021**

| Sector | Fuel or Source | 2021 Usage | Usage Unit | 2021 Emissions (Mt CO2e) |
|---|---|---|---|---|
| Buildings & Facilities | Electricity (NWPP) | 706,609 | kWh | 266 |
| | Propane (LPG) | 2,209.28 | MMBtu | 131 |
| **Buildings & Facilities Total** | | | | **397** |
| Street Lights & Traffic Signals | Electricity (NWPP) | 12,177 | kWh | 11 |
| **Street Lights & Traffic Signals Total** | | | | **11** |
| Vehicle Fleet & Equipment Fuel Consumption | Gasoline (on-road) | 29,856 | Gallons | 283 |
| | Diesel (on-road) | 18,635 | Gallons | 193 |
| **Vehicle Fleet Total** | | | | **476** |
| Transit Fleet | Diesel | 82,500 | VMT | 84** |
| | Gasoline | 128,073 | VMT | 138** |
| **Transit Fleet Total** | | | | **INFO ONLY**** |
| Employee Commute | Gasoline | 343,722.11 | VMT | 167 |
| | Biodiesel/Ethanol | NCNP | VMT | -- |
| | Electric | NCNP | VMT | -- |
| | Hybrid Gasoline | 7,800 | VMT | 2.42 |
| | PHEVs | NCNP | VMT | -- |
| **Employee Commute Travel Total** | | | | **478.42** |

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

** The Transit Fleet is Owned and Operated by Mountain Community/Treasure Valley Transit not the McCall Municipal Government. City of McCall does partially fund transit operations.

**Table 4: Government Operations Emissions Inventory 2021 (continued)**

| Sector | Fuel or Source | 2021 Usage | Usage Unit | 2021 Emissions (Mt CO2e) |
|---|---|---|---|---|
| Solid Waste | Waste Generation | 5.8 | Tons (wet) | 6 |
| | Compost | N/A | N/A | |
| **Solid Waste Total** | | | | **6** |
| Water Treatment & Distribution | Treatment Energy | 1,078,475 | kWh | 409 |
| **Water & Wastewater Total** | | | | **409** |
| Process & Fugitive Emissions | Fugitive Emissions from Natural Gas Distribution | -- | -- | |
| **Process & Fugitive Emissions Total** | | | | **0** |
| **Total Government Operations Emissions** | | | | **1,469 Mt CO2e** |

Figure 10 shows the distribution of Government Operations emissions by sector. Vehicle Fleet & Equipment Fueling is the largest contributor, followed by Water Treatment/Distribution and Buildings and facilities.


**Figure 10: Local Government Operations Emissions by Sector 2021**

**Table 5: 2018 and 2021 Primary Government Operations Emissions Comparison**

| Sector | Fuel or Source | 2021 Usage | 2018 Usage | 2021 Emissions (MT CO2e) | 2018 Emissions (MT CO2e) | Percent Change in Emissions |
|---|---|---|---|---|---|---|
| Buildings & Facilities | Electricity | 700,669 kWh | 884,080 kWh | 266 | 256 | + 3.9% |
| | Propane | 2,078.94 MMBtu | 811.46 MMBtu | 132 | 66 | + 100% |
| Streetlight & Traffic | Electricity | 29,445 kWh | 119,935 kWh | 11.2 | 34.8 | (67.8%) |
| Vehicle Fleet | Gasoline | 29,856 Gal | 20,864 Gal | 283 | 182.3 | + 55.2% |
| | Diesel | 18,635 Gal | 13,029 Gal | 193 | 133 | + 45.1% |
| Employee Commute | Gasoline | 343,722 VMT | 194,125 VMT | 169.7 | 100.2 | + 69.5% |
| | Diesel | NCNP | NCNP | NCNP | NCNP | |
| Solid Waste | Solid Waste Generation | 5.8 Tons | 5.07 Tons | 6.58 | 5.21 | + 26.3% |
| Water (Treatment) ** | Electricty | 1,078,475 kWh | 813,158 kWh | 409.4 | 299.9 | + 36.5% |
| **Total** | | | | **1469.68** | **1,077.4** | **+ 35.8 %** |

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

** Water & Wastewater Distribution & Intake is included in Buildings & Facilities; Water & Wastewater Treatment in Water & Wastewater

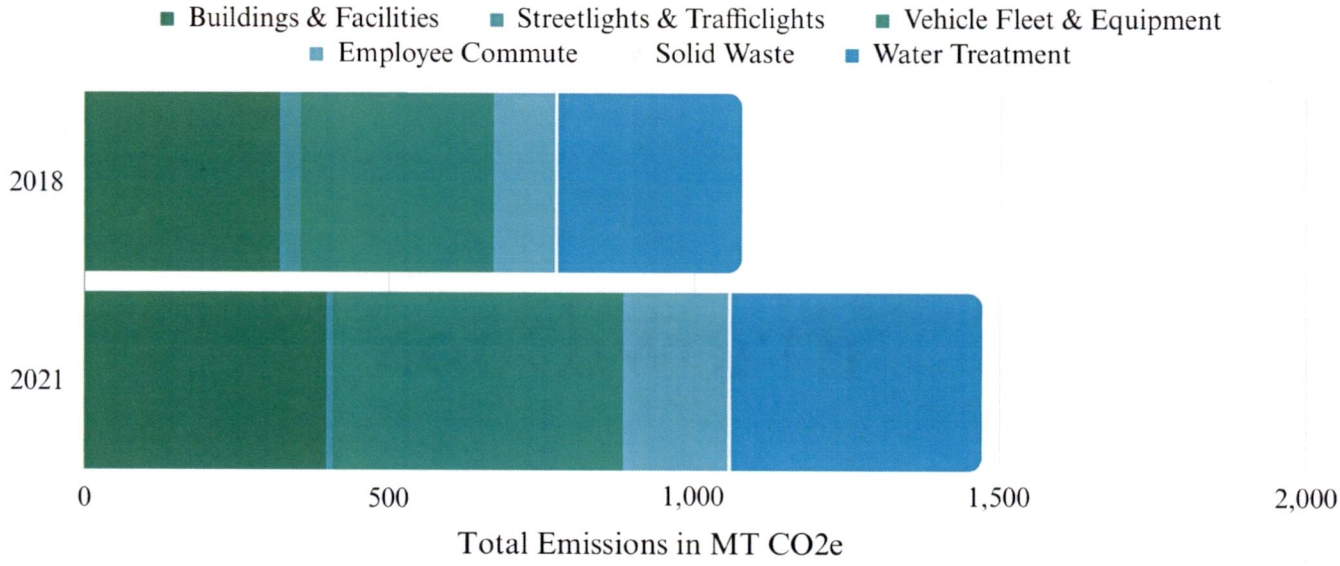



**Figure 11: Comparison of City of McCall Government Operational Emissions by Sector and Year (2018 & 2021)**

# Comparison Discussion
# Local Government Operations (2018 & 2021)

The above table compares 2018 and 2021 activity data and emissions (MT CO2e). When comparing inventories three years apart, it must be recognized that the data collection and the inventory process could have been conducted differently. Most notably, data collection methodologies since 2018 have become more accurate. The various patterns and outliers displayed in the above table might be partly based on the aforementioned inventory changes.

In conducting this 2021 Inventory follow-up, the goal was to measure what the changes to McCall's Local Government Operations emissions would look like from before and after the Covid-19 pandemic and related boom in local tourism, return to in-office work, and increased demand for City staffing, services and infrastructure that came with an influx of visitors and constant stream of temporary residents seeking to enjoy McCall's natural amenities.

Since 2018 the community has seen the new construction of more than 200 household units and demand for water resources, the demolition and relocation of the City Parks Facility, the improvement of HVAC and energy-efficiency in municipal facilities, and a greater snow removal year than 2018. The increased demand for consistent and dependable services and facilities through the municipal government has also exacerbated challenges to workforce retention and recruitment, with the average commuting radius of City employees increasing over time which leads to increases in on-road transportation emissions. We can see the nuanced impacts of this growth in key indicators within the 2021 LGO Inventory such as: Vehicle Fleet, Employee Commute, and demand for Water Treatment.

# Next Steps - Local Government Operations

The inventory should be used to focus and prioritize actions to reduce emissions and inform the McCall Climate Action Plan strategies for emissions reduction. Based on the inventory results, the following areas have the greatest potential for emissions reduction:

- Buildings and Facilities
  - Convert existing buildings from natural gas to electricity, analyze on-site energy potential for public facilities and options for RECs.
- Vehicle Fleet
  - Pursue a feasibility analysis for purchasing and converting internal combustion engine vehicles to electric vehicles or hybrid vehicles.
- Employee Commute
  - Review telework/hybrid policy through the lens of greenhouse gas emissions reduction, consider active transportation commuter incentives.

Completing another GHG inventory in two to five years is recommended to assess progress resulting from any actions implemented. The detailed methodology section of this report, as well as notes and attached data files in the ClearPath Climate Planner tool and a master data Excel file provided to the City of McCall, will be helpful in completing a future inventory consistent with this one.

Below are recommended improvements to monitoring/data that may benefit the City in additional ways for Transportation and Land Use Planning:

- Create a Regional Gravity Model or similar study to measure the VMT of Tourist and Supply Chain vehicles using State Highway 55 entering and recreating in McCall
- Complete Local Government Inventory Annually as part of the City Annual Report to promote improvement and commitment to positive change as well as better comprehension of these analyses over time.
- Consider a more in-depth land-use change analysis in future planning efforts to better understand the impact of development on soil carbon storage or loss over time and encourage or require clustered development and encourage open space preservation.

# Conclusion

This inventory marks the completion of Milestone One of the Five ICLEI Climate Mitigation Milestones. The next steps are to forecast emissions, set an emissions-reduction target, and build upon the existing climate action framework with a more robust climate action plan that identifies specific quantified strategies that can cumulatively meet that target.

The Intergovernmental Panel on Climate Change (IPCC) states that to meet the Paris Agreement commitment of keeping warming below 1.5°C we must:

**Reduce global emissions by 50% by 2030**

**Reach global climate neutrality 2050**

Equitably reducing global emissions by 50% requires that high-emitting, wealthy nations reduce their emissions by more than 50%. More than ever, it is imperative that countries, regions, and local governments set targets that are ambitious enough to slash carbon emissions between now and mid-century.

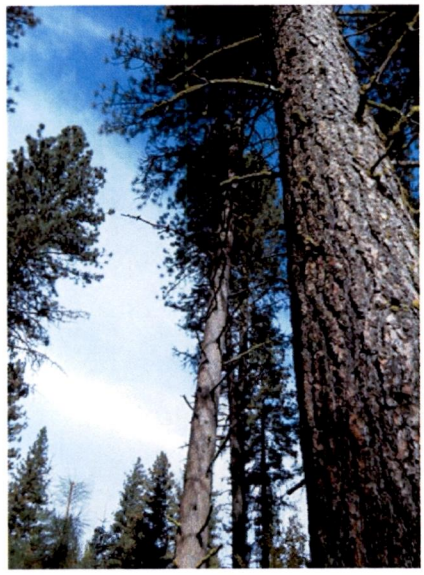
Science-Based Targets are calculated climate goals, in line with the latest climate science, that represent a community's fair share of the global ambition necessary to meet the Paris Agreement commitment. Community education, involvement, and partnerships will be instrumental to achieve a science-based target. ICLEI has calculated the city's Science-Based Targets [10]:

**Absolute SBT: 51.4%**

*Science-Based Targets are climate goals in line with the latest climate science. They represent the city's fair share of the ambition necessary to meet the Paris Agreement commitment to keep warming below 1.5°C.*

In addition, McCall will continue to track key energy use and emissions indicators on an on-going basis. It is recommended that communities update their inventories on a regular basis, especially as plans are implemented to ensure measurement and verification of impacts. Regular inventories also allow for "rolling averages" to provide insight into sustained changes and can help reduce the change of an anomalous year being incorrectly interpreted.

This inventory shows that residential and commercial energy, as well as transportation patterns, will be particularly important to focus on. Through these efforts and others, McCall can achieve environmental, economic, and social benefits beyond reducing emissions.



[10] "Science Based Climate Targets: A Guide for Cities." Science Based Targets Network, November 4, 2021. https://sciencebasedtargetsnetwork.org/.

# Appendix A: Methodology Details

## Energy

**Table 6: Energy Data Sources**

| Activity | Data Source | Data Gaps/Assumptions |
|---|---|---|
| **Community-wide** | | |
| Residential Electricity | Idaho Power | N/A |
| Commercial Electricity | Idaho Power | This record subtracts kWh from City of McCall Supply of Potable Water energy usage and Wastewater Treatment Energy Use - Payette Lakes subtracted to avoid double counting |
| Industrial Electricity | Idaho Power | N/A |
| Residential Non-Utility | EIA State Profiles and Energy Estimates, US Census Bureau | US Census Bureau used to estimate households using each fuel type in Idaho and McCall, then state residential consumption data downscaled by ratio of McCall/Idaho households |
| Commercial Non-Utility | EIA State Profiles and Energy Estimates, Google EIE, Meredith Todd - City Government Records | State EIA consumption data downscaled by ratio of McCall nonresidential sq footage to Idaho nonresidential sq footage (EIE) |
| Industrial Non-Utility | EIA State Profiles and Energy Estimates, Google EIE, Meredith Todd - City Government Records | N/A |

**Table 7: Idaho Power and eGrid NWPP Emissions Factors for Electricity Consumption**

| Year | CO2 (lbs./MWh) | CH4 (lbs./GWh) | N2O (lbs./GWh) | |
|---|---|---|---|---|
| **2021** | 837 | 58 | 8 | Idaho Power did not separately report CH4 and N2O emissions factors for 2021 - eGrid emissions factors were used |

# Transportation

**Table 8: Transportation Data Sources**

| Activity | Data Source | Data Gaps/Assumptions |
|---|---|---|
| **Community-wide** | | |
| Transportation on-road | US DOT, EPA State Inventory and Projection Tool, US National Defaults | N/A |
| Transportation off-road | EPA NEI | Downscaled by pop from EPA's National Emissions Inventory, Emissions factors multiplied by emissions to estimate fuel use |
| Public Transportation | Treasure Valley Transit/Mountain Community Transit | N/A |
| Aviation | 2018 CW Inventory | Assumed insignificant change from 2018 inventory |

For vehicle transportation, it is necessary to apply average miles per gallon and emissions factors for CH4 and N2O to each vehicle type. The factors used are shown in Table 8.

**Table 9: MPG and Emissions Factors by Vehicle Type**

| Fuel | Vehicle Type | MPG | CH4 (g/mile) | N2O (g/mile) |
|---|---|---|---|---|
| Gasoline | Passenger car | 25.3 | 0.0084 | 0.0069 |
| Gasoline | Light truck | 18.2 | 0.0117 | 0.0087 |
| Gasoline | Heavy truck | 5.383557 | 0.0719 | 0.0611 |
| Gasoline | Motorcycle | 44 | 0.0084 | 0.0069 |
| Diesel | Passenger car | 25.3 | 0.0005 | 0.001 |
| Diesel | Light truck | 18.2 | 0.001 | 0.0015 |
| Diesel | Heavy truck | 6.561615 | 0.0051 | 0.0048 |

# Wastewater

**Table 10: Wastewater Data Sources**

| Activity | Data Source | Data Gaps/Assumptions |
|---|---|---|
| **Community-wide** | | |
| Process N2O | Payette Lakes - Jeff Bateman, Manager (jbateman@plrwsd.org) | Population is based on the difference between In-boundary Population and service population (4188) provided by PLRWSD - calculators split between in-boundary (3844) and imported (344) population.<br><br>Payette Lakes Recreational Water and Sewer District uses Nitrification/Denitrification.<br><br>Subtracted from Commercial Grid Electricity to avoid double counting |

# Potable Water

**Table 11: Potable Water Data Sources**

| Activity | Data Source | Data Gaps/Assumptions |
|---|---|---|
| **Community-wide** | | |
| Potable Water | City of McCall | Subtracted from Commercial Grid Electricity to avoid double counting |

# Solid Waste

**Table 12: Solid Waste Data Sources**

| Activity | Data Source | Data Gaps/Assumptions |
|---|---|---|
| **Community-wide** | | |
| Solid Waste | Lakeshore Disposal - Terry Stewart, Operations Manager (Terry.Stewart@WasteConnections.com) | Does not include C & D waste |

# Agriculture, Forestry and Land Use (AFOLU)

**Table 13: Forests and Urban Trees Sequestration and Emissions Data Sources**

| Activity | Data Source | Data Gaps/Assumptions |
|---|---|---|
| **Community-wide** | | |
| Tree Canopy | LEARN | Removals and emissions are marked as "Info Only" |

# Inventory Calculations

The 2021 inventory was calculated following the US Community Protocol and ICLEI's ClearPath Climate Planner software. As discussed in Inventory Methodology, the IPCC 6th Assessment was used for global warming potential (GWP) values to convert methane and nitrous oxide to CO2 equivalent units. ClearPath Climate Planner Climate Planner's inventory calculators allow for input of the sector activity (i.e. kWh or VMT) and emission factor to calculate the final carbon dioxide equivalent (CO2e) emissions.