Harnessing GHG Inventories for Local Sustainability Initiatives

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What is a GHG Inventory?

Community & LGO Inventories, Scope 1-3 Emissions

Goal of a GHG Inventory

Define → Identify → Calculate

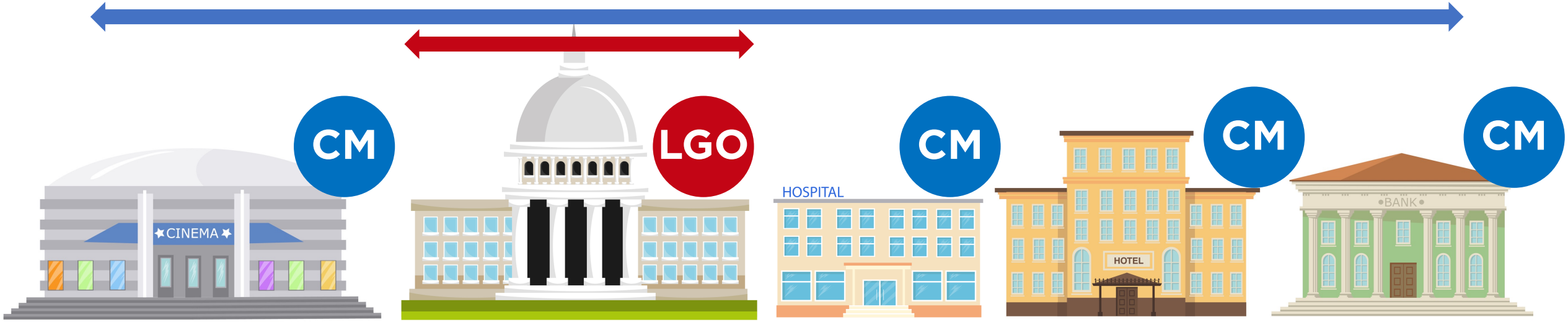
Two Types of Inventories

Community

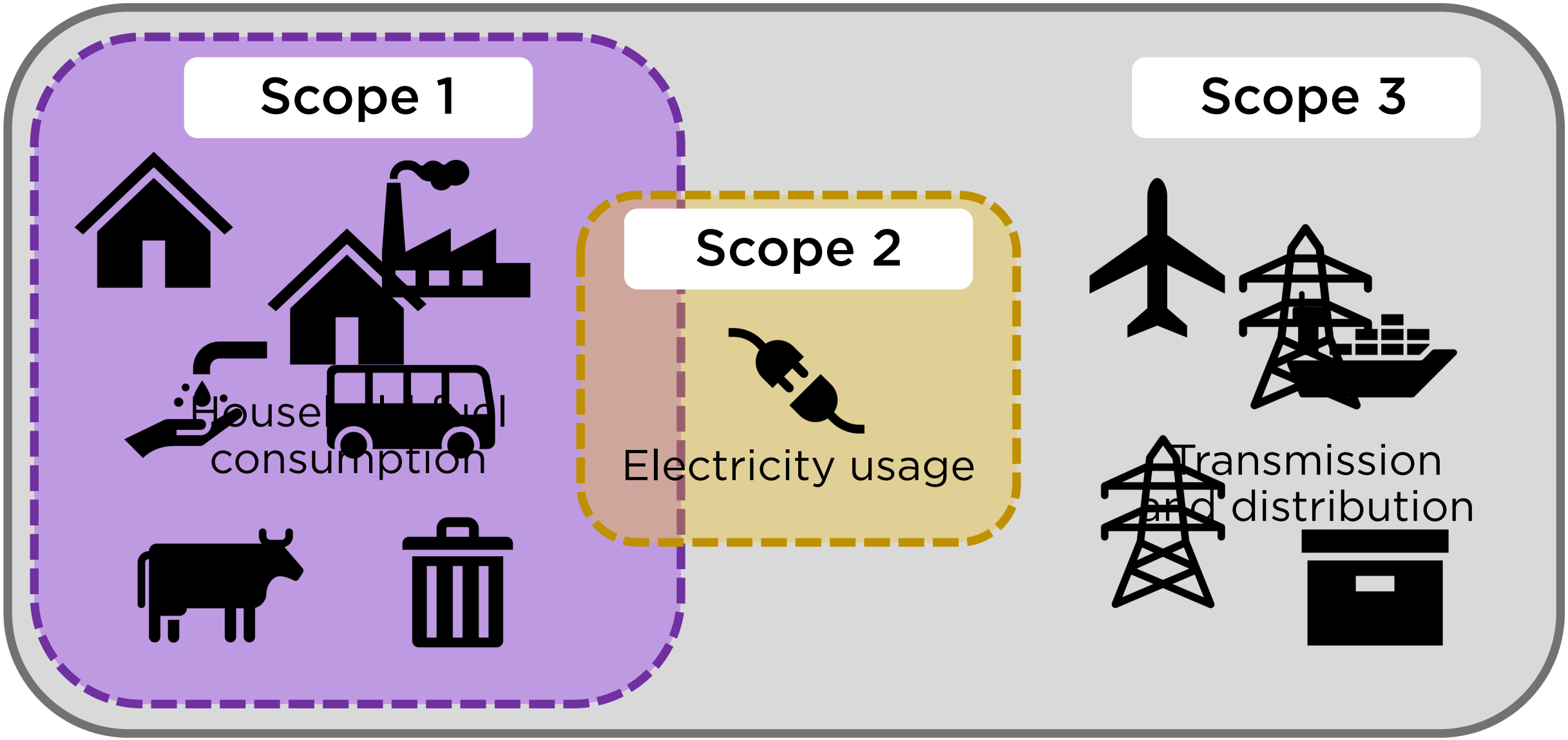
Evaluates emissions arising from **all activities** within a local jurisdiction.

Local Government

Evaluates emissions arising from **local government activities**.



Scope 1, 2, and 3 Emissions



City Overviews

Defining the Project Context

Two Cities, Three Inventories

CM

CM

LGO

Scope 1

Scope 2

Our Motivations

Quantify GHG emissions.

Provide foundation for future sustainability planning.

Aid other municipalities in creating inventories.

Methods & Process

Data Identification, Collection, & More

Overall Process

- Boundary Setting
- Data Identification
- Data Collection
- Inputs and Calculations
- Finalization

ClearPath
AN ICLEI USA TOOL

GHG INVENTORY TOOLS
Local

EPA
United States Environmental Protection Agency

Comparing Tools

ClearPath
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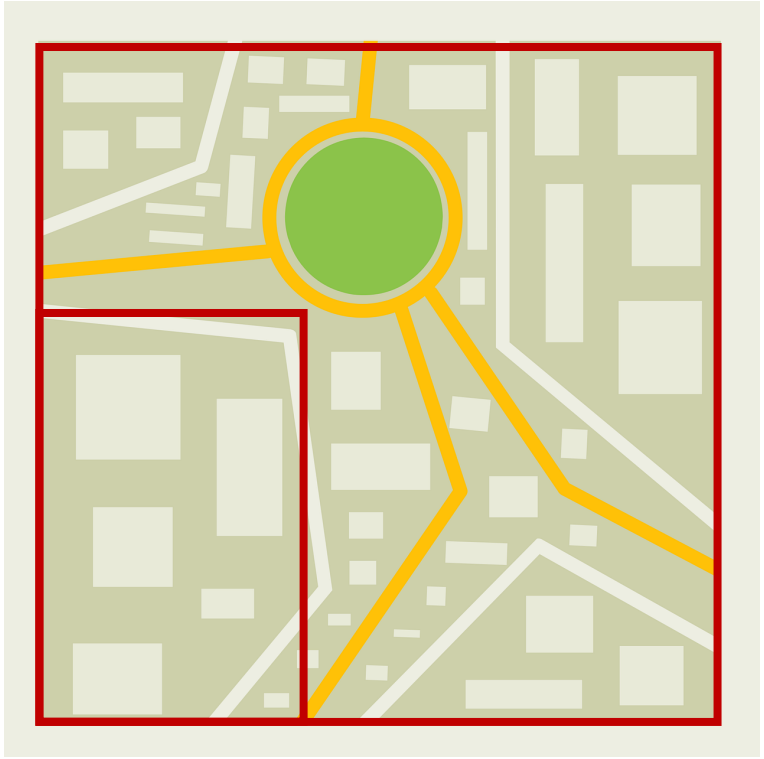
GHG INVENTORY TOOLS Local

EPA United States Environmental Protection Agency

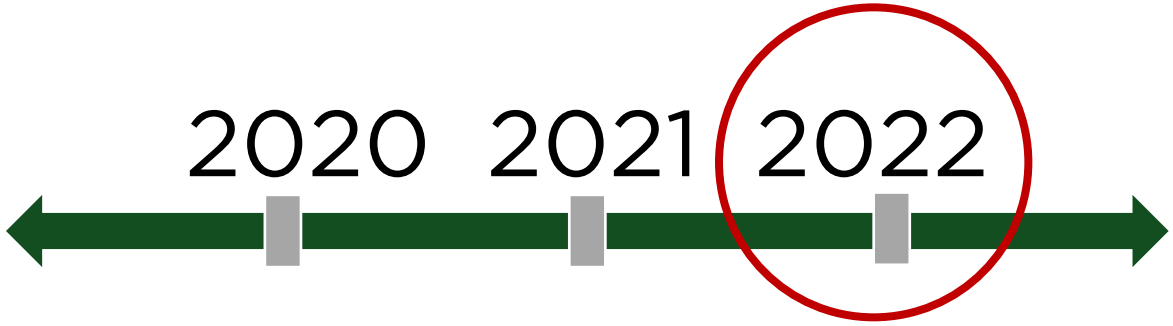
Technical support	No technical support
More data capabilities	Less data capabilities
$1-8K annual membership	Free

Boundary Setting

Physical



Temporal

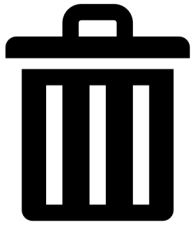


Data Identification & Collection

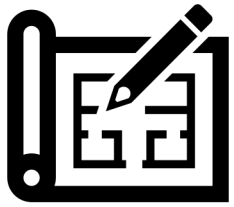
Electric Utilities

Natural Gas Supplier

Local Departments



Waste Haulers



Regional Planning Bodies

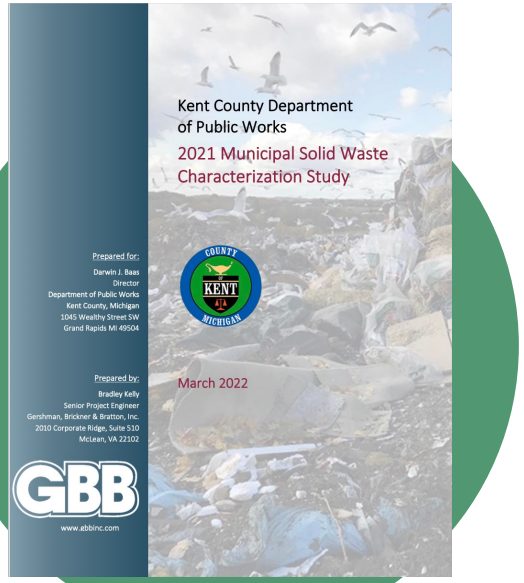
Transit Systems

Inputs & Calculations

Solid Waste Data

United States® Census Bureau

Federal Sources



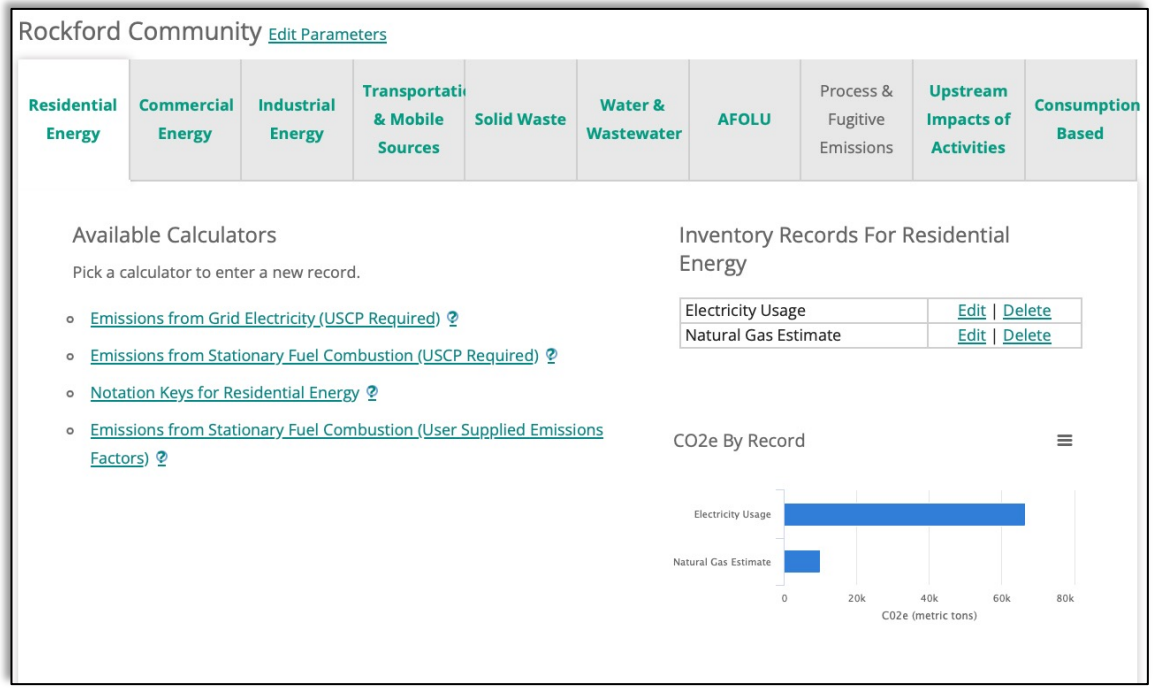
County Sources

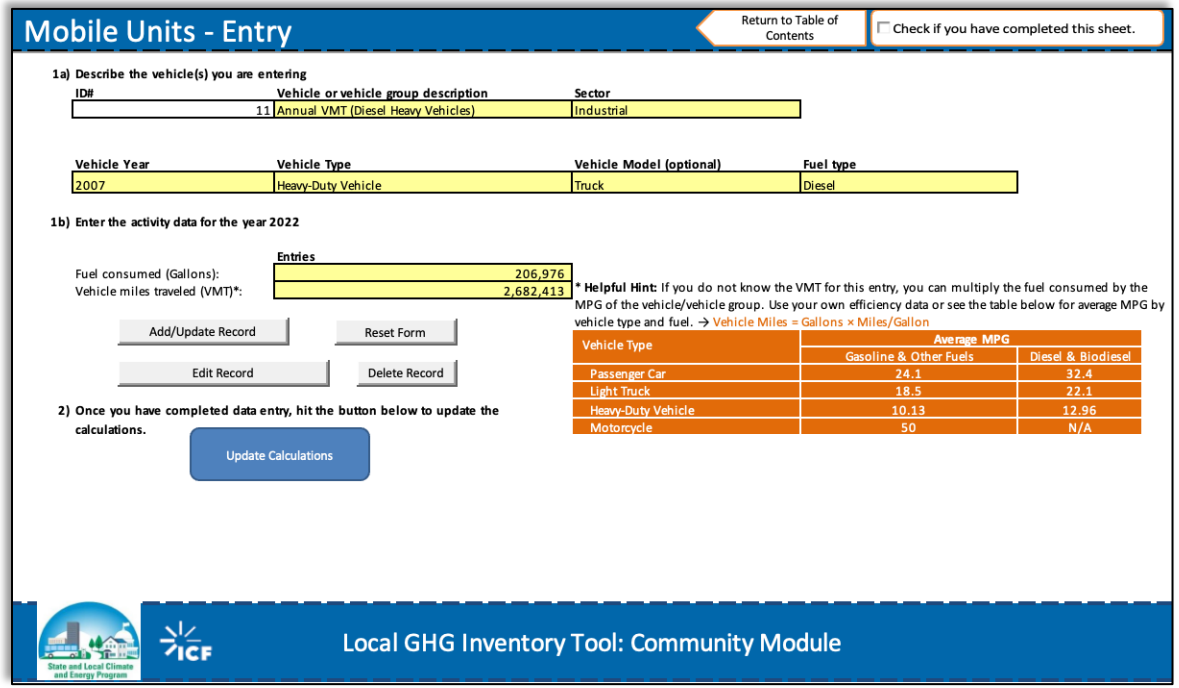
EPA United States Environmental Protection Agency

Waste Reduction Model (WARM)

Local Sources

Finalization





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Inventory Results

Rockford and Grand Haven

Inventory Emissions Summary

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Please use the drop-down menu in the Scope 2 Emissions Selection box to determine which scope 2 emissions methodology is used in the summary tables below.

Scope 2 Emissions Selection:	Location Based

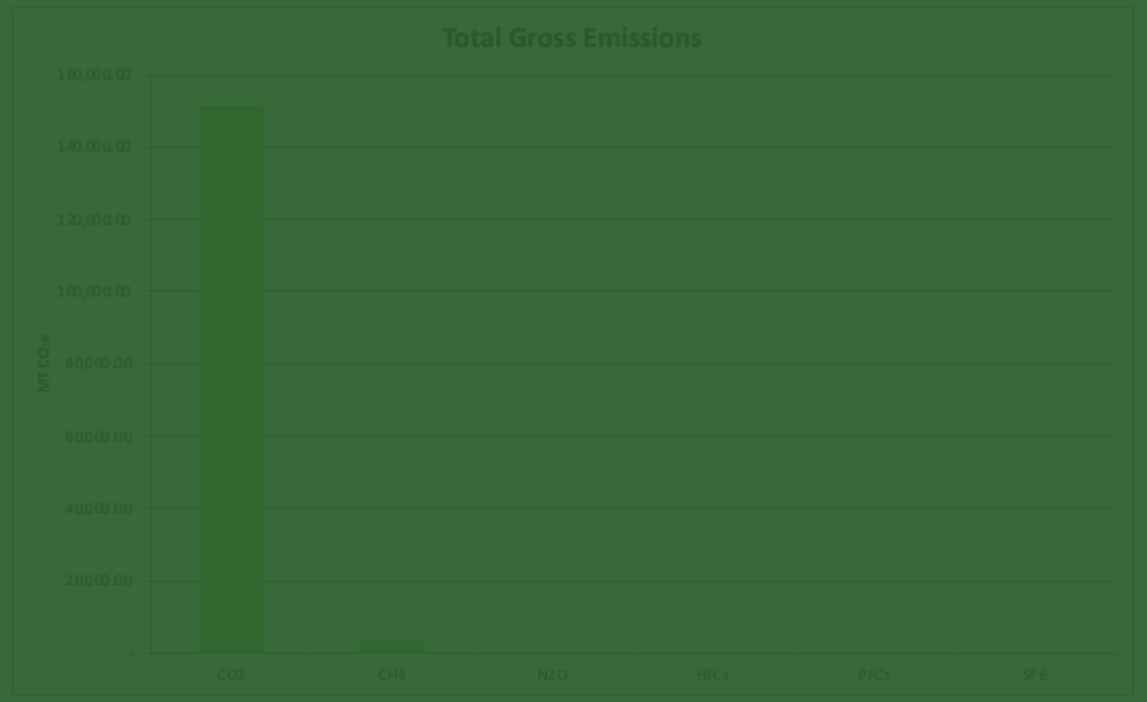
14.19 Per capita Emissions for Grand Haven, MI (MT CO2e/person)

Total Grand Haven, MI Emissions (MT CO2e)

	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	Total MT CO_2e	Percent of Total
Scope 1	93,395.35	225.80	217.83	-	-	-	93,838.98	60%
Scope 2 - Location Based	57,968.81	126.94	209.74	-	-	-	58,305.49	37%
Scope 2 - Market Based (for informational purposes only)	57,968.81	126.94	209.74				58,305.49	
Scope 3	-	-	-	-	-	-	-	0%
Total Gross Emissions	**151,364.16**	**4,004.74**	**427.58**	-	-	-	**155,796.48**	98%
Total Net Emissions	**146,043.58**	**4,004.74**	**427.58**	-	-	-	**150,475.90**	98%

Emissions by Source (MT CO_2e)

Source	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	Total	Percent of Total
Stationary Combustion	70,507.46	156.59	39.71	-	-	-	70,703.76	45%
Mobile Combustion	22,887.90	-	-	-	-	-	22,887.90	15%
Solid Waste	-	-	-	-	-	-	-	0%
Wastewater Treatment	-	24.65	42.81	-	-	-	67.46	0%
Electricity - Location Based	57,968.81	126.94	209.74	-	-	-	58,305.49	37%
Electricity - Market Based (for informational purposes only)	57,968.81	126.94	209.74				58,305.49	
Water	-	-	-	-	-	-	-	0%
Ag & Land Management	-	-	-				-	0%
Urban Forestry	(5,320.58)	-	-				(5,320.58)	-3%
Waste Generation	-	3,652.00	-				3,652.00	2%
Other	-	44.55	135.31	-	-	-	179.86	0%
Total (Gross Emissions)	**151,364.16**	**4,004.74**	**427.58**	-	-	-	**155,796.48**	100%
Total (Net Emissions)	**146,043.58**	**4,004.74**	**427.58**	-	-	-	**150,475.90**	97%



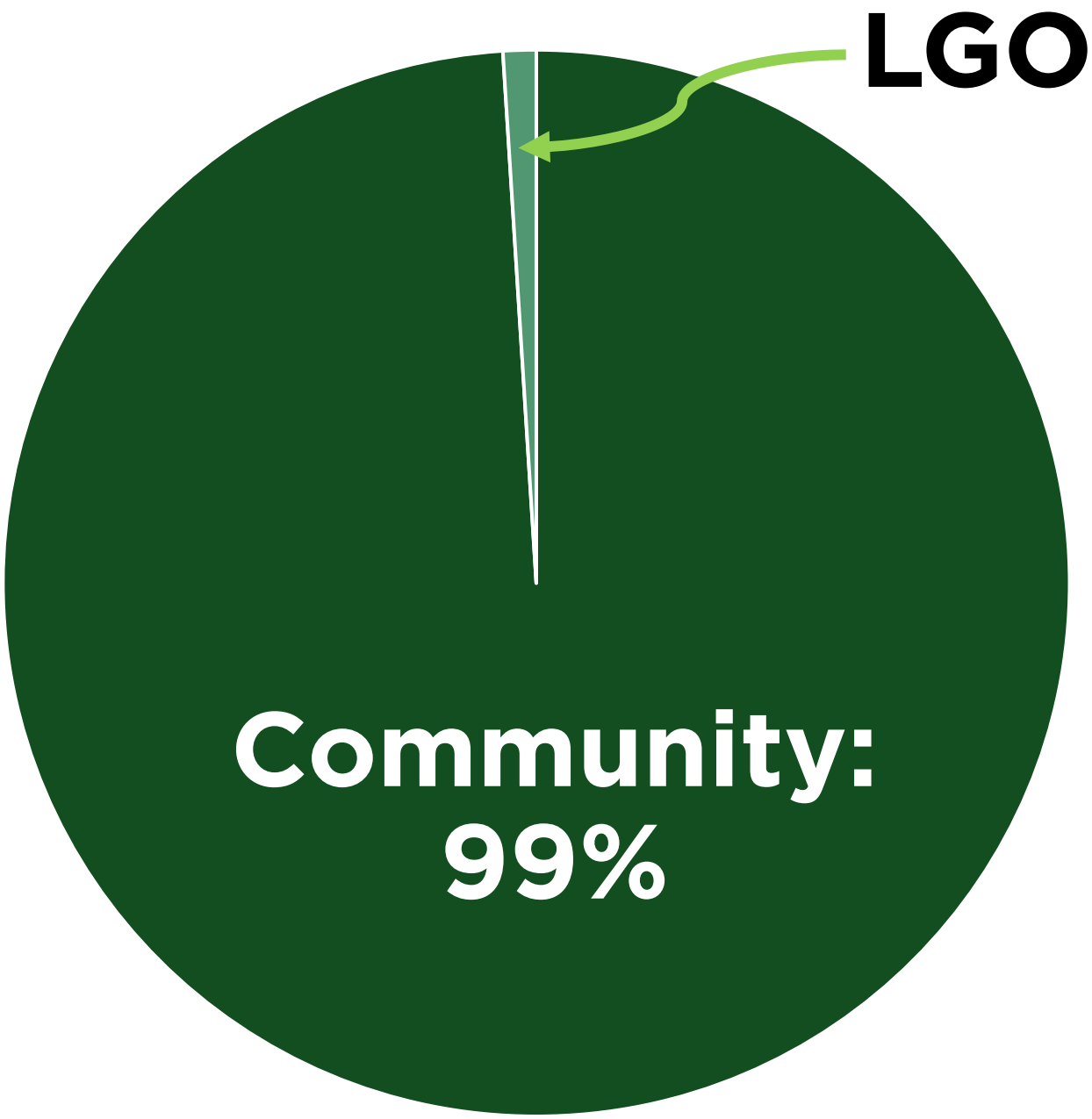
Gross Emissions by Sector

	Total (MT CO_2e)	Percent of Total
Residential	69,436.34	44%
Commercial/ Institutional	44,177.18	28%
Industrial	43,236.14	28%
Energy Generation	-	0%
Total	156,616.63	100%

In both, most emissions are produced by electricity and natural gas use.

Sources	Grand Haven	Rockford
Electricity	37.0%	62.5%
Natural Gas	45.0%	33.0%*
Transportation	15.0%*	3.0%*
Wastewater	1.0%	0.5%
Water	0.0%	0.0%
Waste Generation	2.0%*	1.0%*
Gross Total	**100.0%**	**100.0%**
Urban Forestry	-3.0%*	-1.0%*
Net Total	**97.0%**	**99.0%**

* Estimated data



Municipal operations make up a fraction of overall emissions.

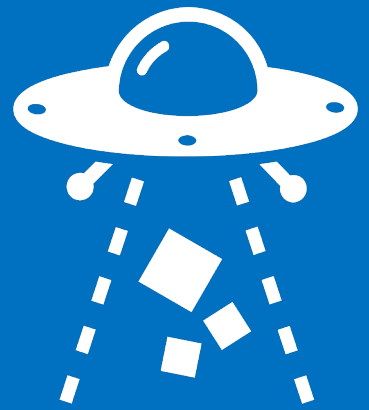
Future Planning

Connecting Data to Sustainability Initiatives

Updating Inventory Data

Fill in Data Gaps

Refine Models

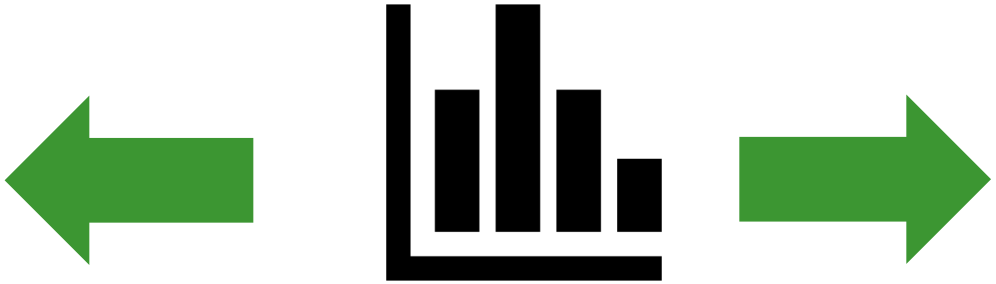


Streamline Collection

Further Connection

Engaging with Stakeholders

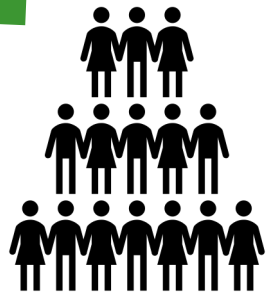
Local Departments



Data

State Agencies

Businesses



Residents

Developing a Sustainability Plan

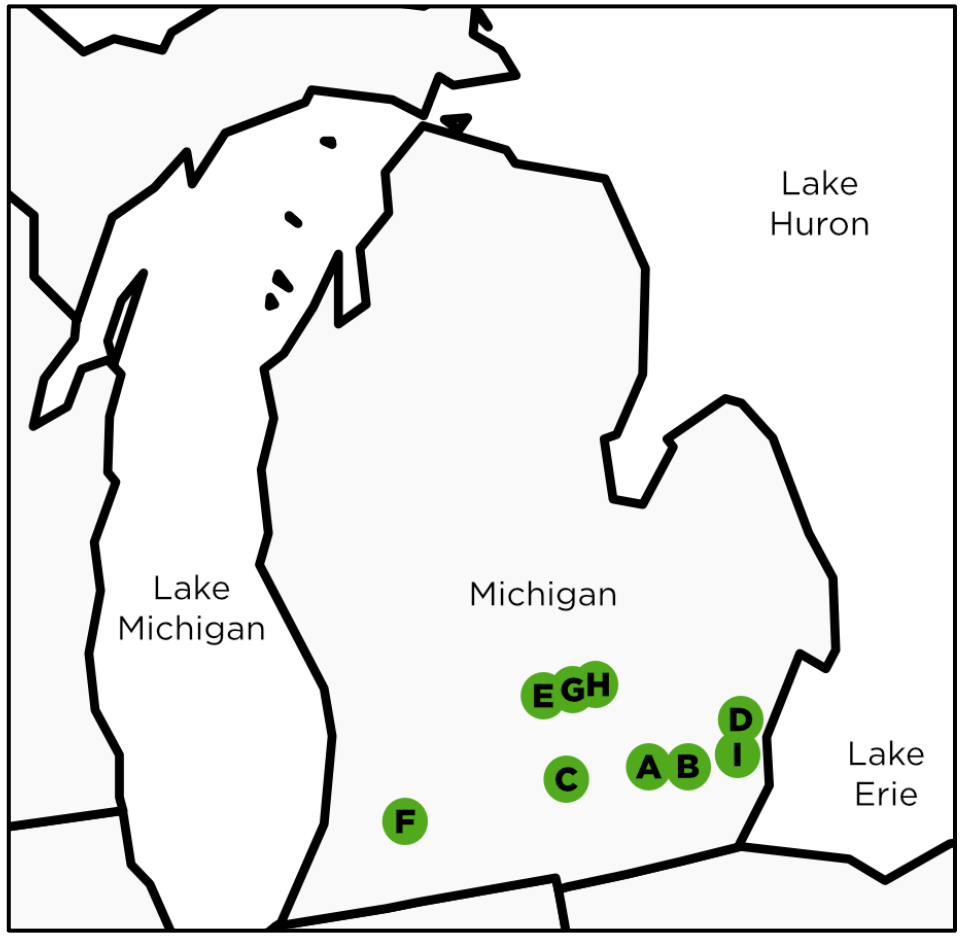


Figure 1. Map of Community-Level Municipal Climate Plans in Michigan

- Based on results, use data to target strategies that reduce GHG emissions:
  - Increasing walkability
  - Energy efficiency
  - Renewable energy expansion

Potential Actions

- Promote Energy Efficiency
- Encourage Renewable Energy Adoption
- Install Community and Municipal Solar
- Energy Performance Contracts
- Smart Metering
- Promote Educational Awareness
- Green Building Certification
- Promote Active Transportation
- Support Electric Vehicle Infrastructure
- Invest in Public Transportation

Additional Resources

CATALYST COMMUNITIES

GRAHAM SUSTAINABILITY INSTITUTE
UNIVERSITY OF MICHIGAN

MICHIGAN GREEN COMMUNITIES

Thank you!

Questions?