

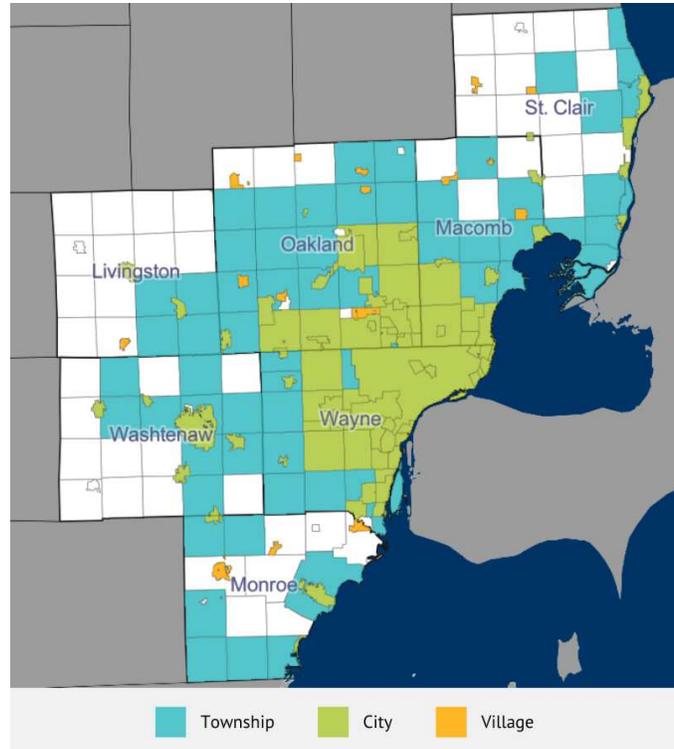
2019 Southeast Michigan Regional Greenhouse Gas Emissions Inventory



Executive Summary

The 2019 Regional Greenhouse Gas Emissions Inventory (GHGI) for Southeast Michigan, commissioned by the Michigan Department of Transportation (MDOT) for the Southeast Michigan Council of Governments (SEMCOG), provides a summary of greenhouse gas (GHG) emissions generated within the region during 2019. The inventory was designed to comply with the Global Protocol for Community-scale Greenhouse Gas Emissions Inventories (GPC) basic-level requirements.

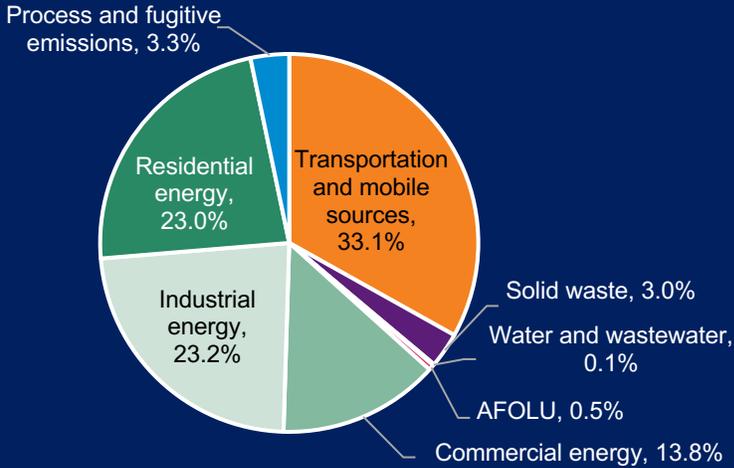
The GHGI provides a summary of emissions for the seven-county region in Southeast Michigan, which includes Wayne, Oakland, Washtenaw, Monroe, Livingston, Macomb, and St. Clair Counties (see map to the right).



Greenhouse gases, which trap heat in the atmosphere, significantly contribute to climate change. The work of the GHGI helps Southeast Michigan to build an understanding of the region's contributions to GHG emissions, actively plan for climate change, and strengthen resilience to anticipated climate impacts. The inventory report is the first step toward efforts to reduce emissions, as it identifies major sources of GHG emissions and provides information on emissions trends over time.

The 2019 inventory shows that about 63 percent of the region's GHG emissions come from the stationary energy sector, which includes all fossil fuels used in the creation of electricity and natural gas consumption that heats homes and businesses (Environmental Protection Authority n.d.). Transportation accounts for 33 percent of the region's GHG emissions, and solid waste, wastewater, and agriculture, farming, and other land use (AFOLU) emissions account for most of the remaining 4 percent. Breakdowns of total and per capita emissions for each of the region's seven counties and the City of Detroit are available within the report. The following figures provide an overview of the emissions inventory by sector and within each sector.

FIGURE 1. 2019 Regionwide GHG Emissions by Sector



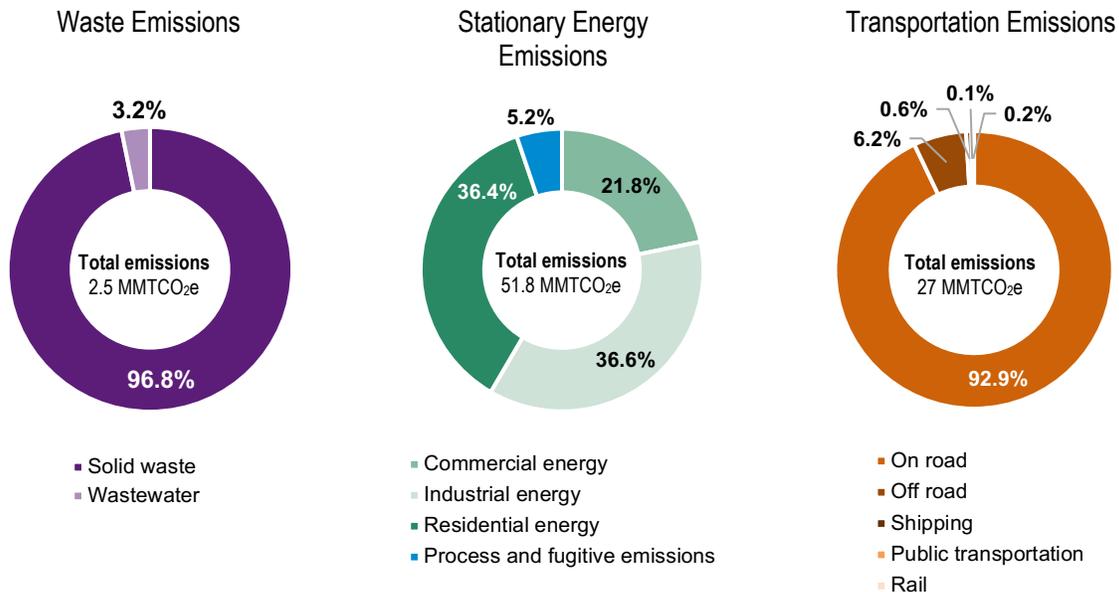
Note: AFOLU stands for agriculture, forestry, and other land use.
Source: PSC analysis of ICLEI ClearPath data

Maintaining an accurate inventory of GHG emissions is critical for developing and monitoring climate change mitigation strategies. The results of this inventory were informed by the climate mitigation targets and strategy recommendations contained within the Michigan Healthy Climate Plan and will be considered in future planning efforts conducted by SEMCOG and partner agencies.

Summary of 2019 Emissions

In 2019, the region produced approximately 82 million MTCO₂e (metric tons of carbon dioxide equivalents) of GHG emissions. Figure 2 below provides a more detailed breakout of regional emissions within each sector. The 2019 inventory also included analysis of the seven counties within the region. Figure 3 reflects emissions per capita by county.

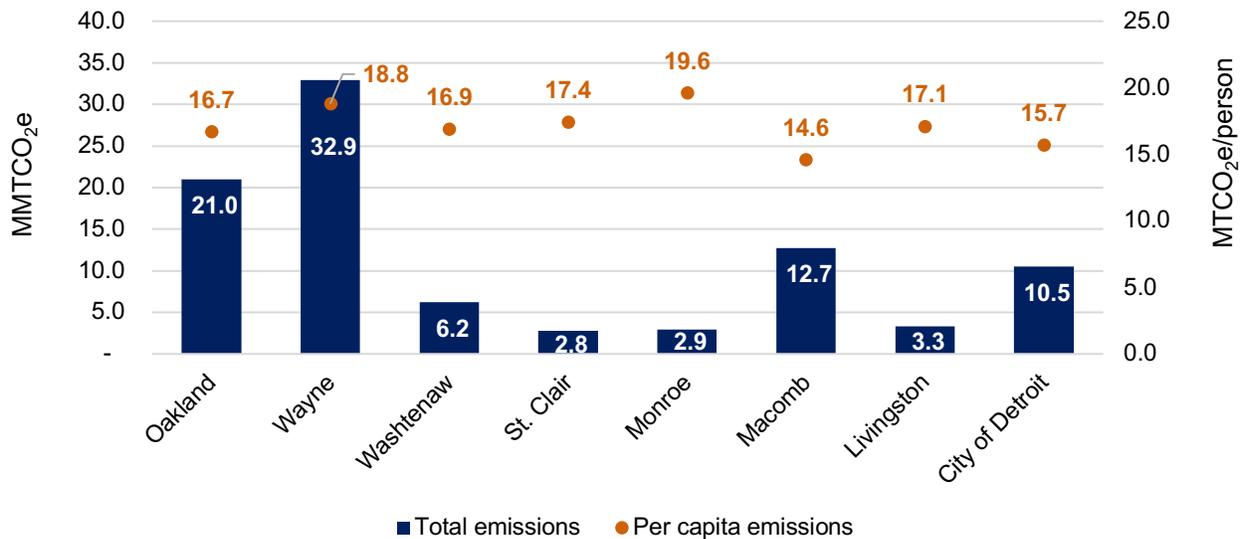
FIGURE 2. 2019 Regionwide GHG Emissions Within Each Sector



Source: PSC analysis of ICLEI ClearPath data

Some of the drivers of high emissions per capita include usage of single-occupancy vehicles for commuting, differences in heating and cooling of homes, and other activities.

FIGURE 3. 2019 Per-capita Emissions by County (MTCO₂e/person)



Source: PSC analysis of ICLEI ClearPath data

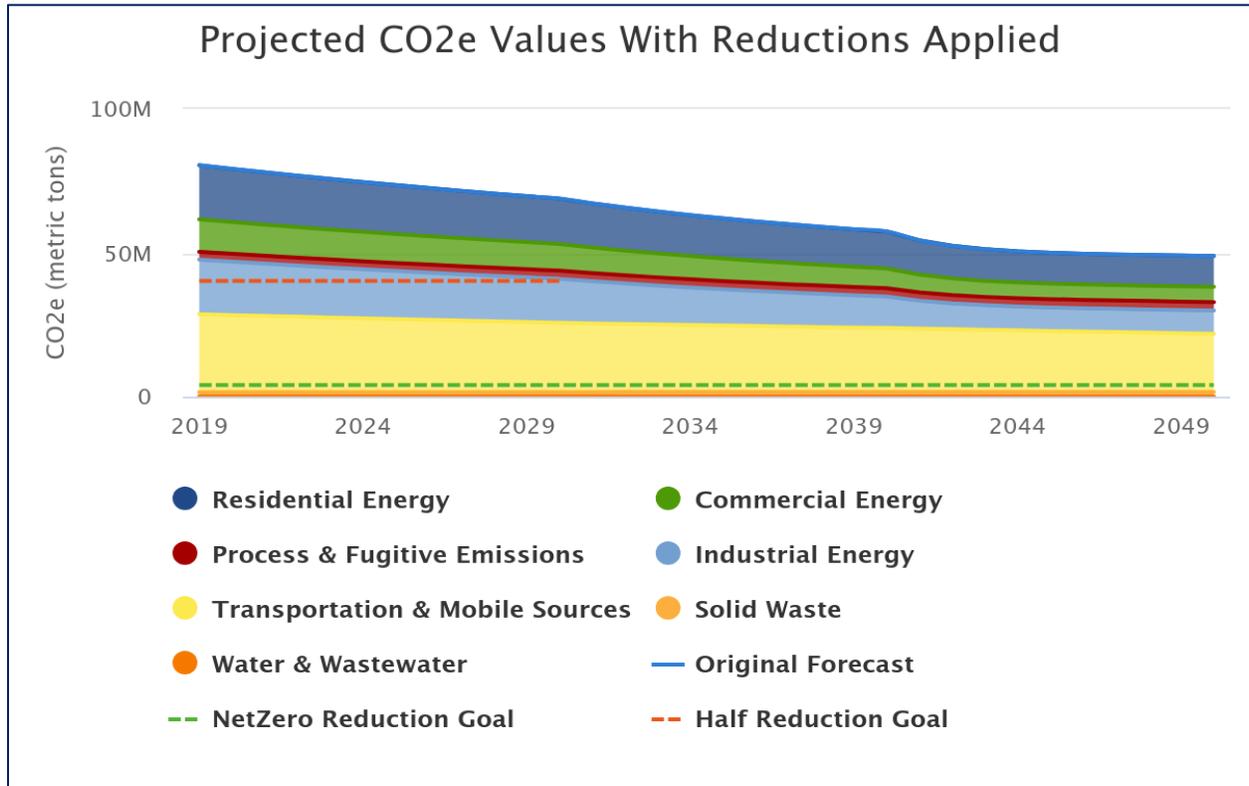
Emissions Projections

Following extensive regional data collection and analysis, several strategies for reducing GHG emissions in the region were explored. These strategies set the framework for future climate action planning. While there are regional strategies for consideration, every county and individual community must consider the unique local geographic and demographic factors that influence decision making for sector-specific strategies. A list of reduction strategies can be found in the full report.

Projected emissions and reductions for the region were modeled under two scenarios to show how emissions from the region may change in the future. The first is a forecast, or “business as usual” (BAU) model, to demonstrate emission trends if all contributing activities continue on the current trajectory. The second is a scenario based on the long-term goals of the reduction plan. Goals were established based on the Michigan Healthy Climate Plan.

- **Scenario One: Original Forecast**
 - Assumes no change in emissions per capita from 2019 through 2050.
- **Scenario Two: Net Zero Reduction Goal**
 - Assumes that net per-capita emissions will decrease to a net zero indicator by 2050 and assumes the region will maintain net negative emission thereafter.

FIGURE 4. Emission Projections by Scenario and Sector



Source: PSC analysis of ICLEI ClearPath data

Emission Reduction Strategies

The second scenario—the regional emission reduction strategy—will be achieved in two milestones, the years 2030 and 2050. The scenario was developed by analyzing the costs and benefits, estimated feasibility, estimated timelines, and associated co-benefits of potential emissions reductions and consists of high-level actions based on available data and modeling. Key reduction strategies identified through the inventory included adoption of clean and sustainable energy, electrification of buildings, and reduction in vehicle miles traveled (VMT).

The following table outlines broad reduction strategies that, when implemented in context, can result in significant reductions in GHG emissions.

FIGURE 5. Regionwide GHG Emissions Reduction Strategies

Strategy	2030	2050	Impact Level
Clean electricity	20.8	28.8	Very high
Electric vehicle adoption	3.1	16.9	High
Building electrification	2.5	8.7	High
Green industry	2.4	5.7	High
VMT reduction	1.8	2.5	Medium
Building efficiency	0.8	0.8	Low
Solid waste	0.5	0.7	Low

Note: *Million Metric Tons CO₂e

Conclusion

This inventory can help local governments throughout Southeast Michigan make decisions about where to prioritize the development of GHG emissions strategies. While additional information, such as cost per metric ton of reduction, is helpful, focusing on those areas that contribute significantly to the region's overall GHG footprint can be a starting point for policies, programs, and projects that can support Southeast Michigan's leadership in addressing the causes and impacts of climate change.



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