2024 LAKEWOOD MUNICIPAL GREENHOUSE GAS EMISSIONS EXECUTIVE SUMMARY

Introduction

The City of Lakewood has set ambitious long-term goals for reducing community-wide emissions of climate-changing greenhouse gases (GHGs), aiming to achieve 80.4% reduction from 2018 levels by 2040 and net zero GHG emissions by 2050. To support these goals, the city is leading by example and aiming to achieve the same GHG reductions for its government operations. This report summarizes the findings of Lakewood's first assessment of municipal GHG emissions based on calendar year 2024 data. This data establishes a baseline that will be used to measure progress towards the City of Lakewood's long-term municipal GHG reduction commitments. It serves as a foundational document in understanding emissions trends and helps identify priority areas for the emissions reductions needed to meet the City's goals and aspirations.

This report covers the City of Lakewood's municipal operational sectors including building energy use, fleet vehicles and equipment, employee commute and business travel, landfilled waste, refrigerants, and usage of materials. Consumption-based sources are materials that the city uses and include emissions from paper purchases, asphalt and cement use, computer and hardware emissions, fertilizer emissions, well-to-wheel emissions (emissions from the transport of gasoline and diesel from the well to the gas station), and water transport emissions (emissions from electricity used to pump and transport water for city use).

Summary of 2024 Inventory Results

The City's operational emissions totaled 21,101 metric tons of carbon dioxide equivalents (mt CO_2e) in 2024. These emissions included the following sectors: building energy (electricity and natural gas), fleet vehicles and equipment, employee commute and business travel, waste, refrigerants, and usage of materials. See Figure 1. Top sectors for emissions include Building Energy (40.7%), usage of materials (39.3%), and fuel used by fleet vehicles and equipment (11.7%). Materials used include asphalt and concrete use, fertilizer usage, food purchases, paper purchases, computer and hardware purchases, water transport energy use, and well-to-wheel emissions.

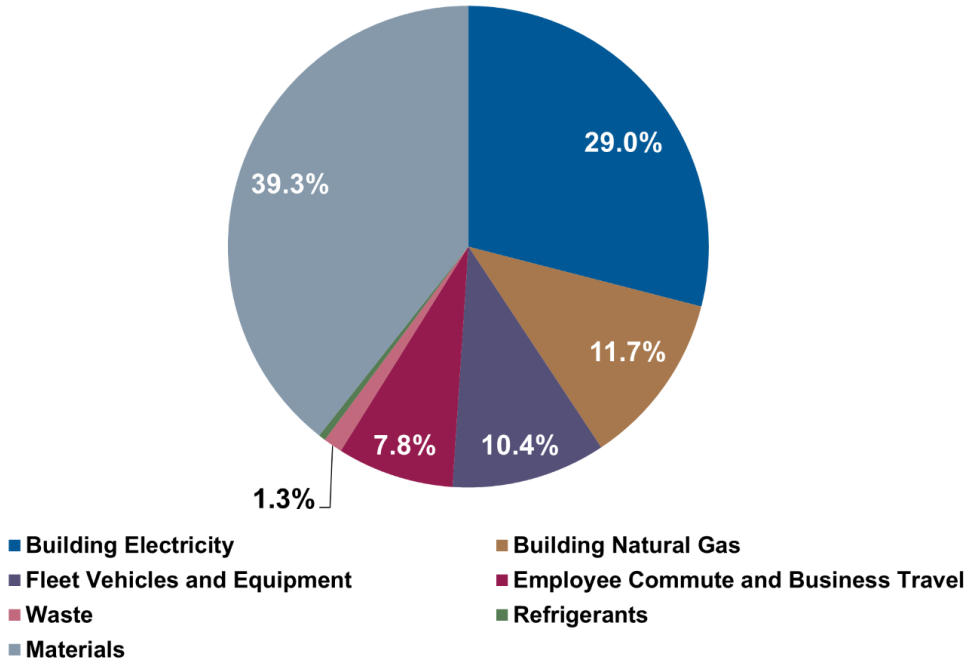

Figure 1. Sector emissions for Lakewood's government operations in 2024 including usage of materials.

The City's operational emissions, without consumption-based sources, totaled 12,798 metric tons of carbon dioxide equivalents (mt CO_2e). See Figure 2. Excluding consumption-based sources, top sectors for emissions include building energy use (67%), fuel use by fleet vehicles and equipment (17%), and employee commuting and business travel (13%).

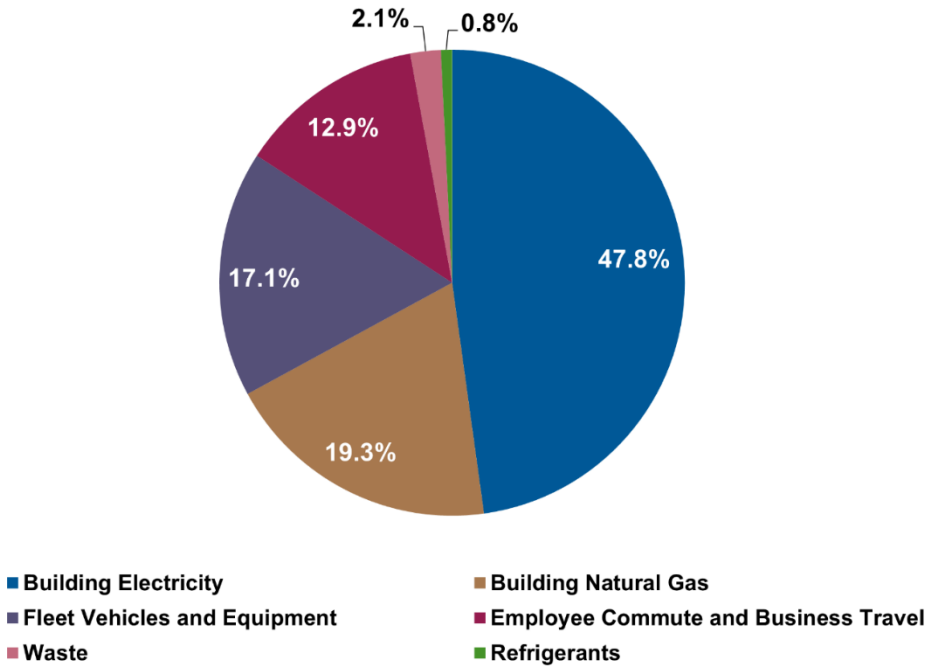

Figure 2. Sector emissions for Lakewood's government operations in 2024 excluding usage of materials.

Presenting the sectors without consumption-based materials shows the areas that the city has more direct control over how municipal emissions can be reduced. Consumption-based materials are often excluded from analyses because the city has less influence over their emissions resulting from the entire life cycle (out of city production, transportation, use, and disposal) of products used.

With approximately 1,831 employees, including full-time, part-time, temporary/variable, and seasonal staff, Lakewood's emissions per employee (including materials) is about 19 mt CO_2e per employee (when adjusted for full-time equivalent employees). Excluding materials, emissions per full-time equivalent employee are estimated to be 11.5 mt CO_2e.

Methodology

The Local Government Operations Protocol[1] was used to guide the calculation of emissions for the City of Lakewood's local government operations. Activity data were collected from various departments across the City and emission factors were collected as needed. Emissions were calculated based on methods provided by the Protocol.

Targets and Strategies

The city aims to reduce greenhouse gas emissions at the community scale by 60.7% below 2018 levels by 2030, and 80.4% by 2040, and achieve net-zero emissions by 2050. Additionally, the city seeks to enhance community resilience and preparedness to mitigate the impacts of climate change, including extreme heat, flooding, and other climate-related hazards.

Lakewood can directly demonstrate the impact of their actions by modeling the integration of potential emissions reduction with the strategies found in the recent Comprehensive Plan update. This data-driven approach, coupled with the city's direct control, strengthens Lakewood's ability to achieve targets and reductions. The following strategies were modeled under a "moderate" implementation scenario (targets in parentheses):

- LED streetlight conversion (4,000 total lights converted).
- Building electrification (75% of square footage electrified).
- Building retrofitting and energy efficiency measures (40% of square footage retrofitted).
- Additional rooftop solar photovoltaics (additional 6,000 kW of solar installed).
- Fleet vehicle electrification (75% of fleet vehicles electrified).
- Increase in teleworking (employees telework for one day per week).
- Lowered emissions in asphalt use (lower emissions asphalt in 50% of all asphalt applications).

[1] ICLEI's Local Government Operations Protocol, along with standard best practices, determines the methodologies for defining the inventory, boundary, time period, emission scopes, and greenhouse gases.

Under this scenario, it is estimated that Lakewood can avoid 55% of all municipal emissions by 2050, including material usage emissions. When considering just building energy use and fleet vehicles and equipment, these strategies can reduce emissions 87% from 2024 totals by 2050. The strategy with the highest impact on reducing emissions is the lower emissions asphalt strategy, followed closely by building electrification. See Figure 3.

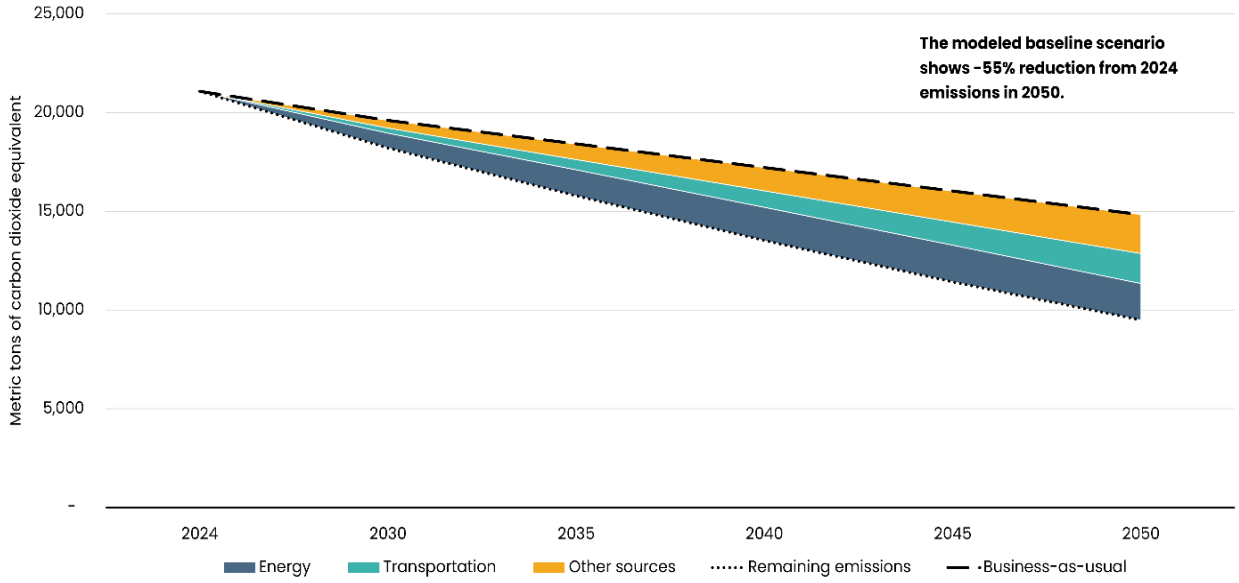

Figure 3. Modeled GHG emissions reductions from the selected strategies from 2024-2050.

Next Steps

The City of Lakewood is committed to improvements targeted at reducing its municipal emissions. This initial municipal inventory serves as a crucial foundation to identify next steps for implementing emissions reduction projects and provides a baseline for understanding Lakewood's internal operational footprint. A Municipal Decarbonization Plan is also recommended in the City's Envision Lakewood 2040 Comprehensive Plan, which will analyze emissions from the city's 2025 inventory in greater depth, prioritize capital improvements through a phased timeline, and provide projected cost estimates to guide budgeting. Through this additional strategy modeling and analysis, the City can effectively identify key areas, develop mitigation strategies, and ultimately work towards significantly reducing their municipal emissions.