



CITY OF HARRISONBURG PUBLIC WORKS

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TO: Ande Banks, City Manager
FROM: Keith Thomas, Sustainability and Environmental Manager
DATE: October 24, 2023
RE: 2021 & 2022 Greenhouse Gas Emission Reports for the City of Harrisonburg

Summary:

The Public Works Department will present findings from the recently completed City of Harrisonburg Greenhouse Gas Emissions Inventory.

Background:

The City of Harrisonburg, Virginia, greenhouse gas (GHG) emissions inventory was completed for the 2021 and 2022 calendar years. The baseline year chosen for future comparisons was 2016. This report is part of Phase 2 of the City of Harrisonburg's Environmental Action Plan (EAP). The GHG emissions inventory was completed at both the Municipal and Community levels.

The scope of the Municipal inventory includes energy (electricity, natural gas, and fuel oil) for City buildings/facilities, electricity for street/traffic lights, diesel/gasoline fuels for City fleet vehicles/equipment and City Transit buses.

The scope of the Community inventory includes energy (electricity and natural gas) split among the following major sectors: Residential, Commercial, Industrial, Municipal, Water & Sewer, and James Madison University (JMU). Community inventory also includes estimated fuel use (gasoline and diesel) for vehicle travel within the City boundaries based on Virginia Department of Transportation (VDOT) traffic counts. GHG emissions from Solid Waste, Water Treatment, and Wastewater Treatment are included in the Community Inventory as well. This scope is focused on the broader Community GHG emissions, which are only indirectly affected by City policies/initiatives and controlled more directly by the activities and behavior of the community as a whole and its members individually.

Modifications to the 2021 scope include evaluating emissions using the 20-yr Global Warming Potential (GWP) values in addition to the 100-yr GWP. Additionally, fugitive methane emissions were factored into the calculations. Modifications to the 2022 scope involved changing the accounting process for the City's water treatment operations. Harrisonburg's Water Treatment Plant serves more than just the City, but the City controls the operations and has decided to explicitly include all of this energy and the associated emissions. In previous years, the water electricity totals were allocated based on the fraction of City customers. Sewer electricity is still allocated by flow percentage.

Total Municipal GHG emissions in 2022 for Harrisonburg were 20,934 metric tons, a 3.8% decrease from the 2016 baseline level using 100-yr GWP values. Buildings/facilities accounted for 39% of these emissions and the dominant fuel source for the City was electricity at 50%. School operations including electricity, natural gas, fuel oil, and diesel fuel (school buses) contributed 31% of all Municipal GHG emissions. For the 20-yr GWP, the total municipal emissions were 25,203 metric tons, a 5.5% decrease. This higher value for GHG emissions in the 20-year timeframe is due to the higher relative GWP of methane from natural gas leakage and solid waste landfill gas.

Total Community GHG emissions in 2022 for Harrisonburg were 601,000 metric tons, a 4.6% decrease from the 2016 baseline level using the 100-yr GWP values. The Commercial and Transportation sectors accounted for 31% and 28% of these emissions, respectively, and the dominant fuel source for the Community emissions was electricity at 38%. The Municipal sector accounted for approximately 3.5% of the total Community GHG emissions. For the 20-yr GWP analysis, total Community GHG emissions in 2022 were 775,000 metric tons, a 4.8% decrease.

This report can serve as the basis for further discussions and planning among key stakeholders in both the City and Community to develop action plans for GHG emissions reductions.

Key Issues:

N/A

Environmental Impact:

N/A

Fiscal Impact:

N/A

Prior Actions:

In 2020 City Council adopted Phase 1 of the Environmental Action Plan.

Alternatives:

N/A

Community Engagement:

N/A

Recommendation:

N/A

Attachments:

1. City of Harrisonburg Greenhouse Gas Emissions Inventory
2. Presentation

Review: