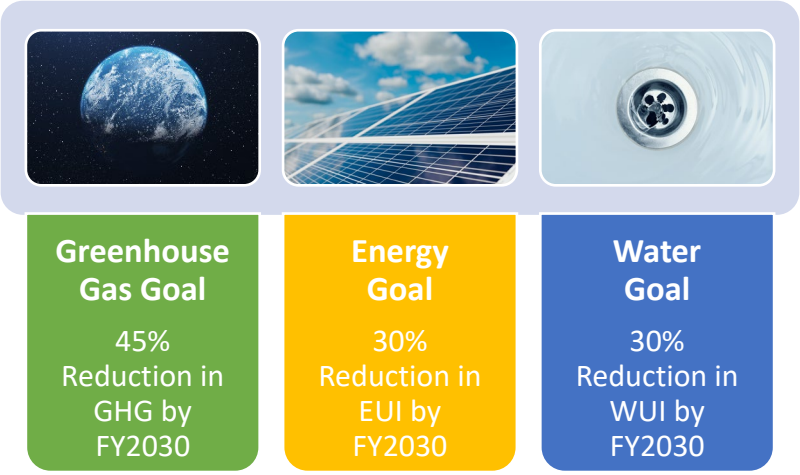
City of Charlottesville Fiscal Year 2023 Annual Energy and Water Performance Report - Executive Summary

The City of Charlottesville's Energy and Water Management Program (EWMP) monitors and manages energy and water usage of the City's municipal sites, which include both the local government and the Charlottesville City School (CCS) facilities. The EWMP is focused on supporting the Charlottesville community-wide climate action goals, achieving a 45% reduction in greenhouse gas emissions from FY2011 levels by 2030 and carbon neutrality by 2050, by taking necessary actions that improve efficiency, reduce the reliance on fossil fuels, and decrease greenhouse gas emissions. New to the FY2023 report is the inclusion of performance targets and reduction goals aligned with the City's Climate Action Plan. Building on the previous energy and water performance reports, the City of Charlottesville FY2023 Annual Energy and Water Performance Report (LINK) outlines actions and the energy and water performance of over 70 municipal sites in the 2023 fiscal year (July 2022 – June 2023).

New Performance Targets and Reduction Goals



The City's utility usage performance targets are now represented as Energy Use Intensity (EUI) and Water Use Intensity (WUI). These metrics are seen as a standard for comparing building performance as they normalize against facility square footage, thereby allowing different size facilities to be compared with others of the same building type and would allow the portfolio to be compared to itself overtime, no matter the fluctuation in total square footage. Consistent with the City's established Climate Action Plan and greenhouse gas reduction commitments, the EWMP has set the municipal targets to support the City meeting their reduction goals within the committed timeline.

Fiscal Year 2023 – Key Performance Findings

The City's performance for FY2023 provides a clear view of building performance post COVID-19. In FY2023**, Charlottesville (city government and schools) spent $3.45 million on energy and water utilities**, which shows a rebound and higher usages to FY2019 (pre-pandemic costs) (Figure 1). Electricity makes up the majority (78%) of the City's municipal utility costs, water and sewer being the next largest at 14%

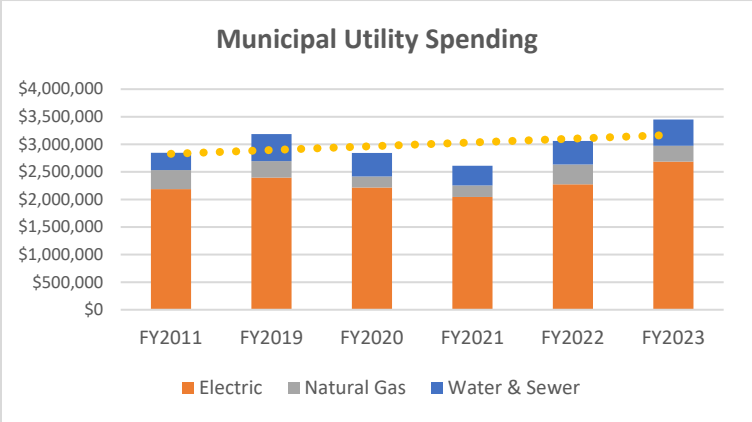


Figure 1: *The City's utility spending for the past 5 fiscal years and FY2011 (baseline year) for each commodity type across all City facilities. The yellow dotted line is the overall trend in spending over time across all years.*

of costs, and natural gas making up 8% of utility costs. Compared to the portfolio baseline FY2011, FY2023 saw a 21% increase in utility expenditures with a 23% increase in electricity, an 18% decrease in natural gas, and a 50% increase in water. This increase in utility expenditures is associated with increasing utility rates, facilities being run to increase ventilation, increased utility usage, and several additional buildings added to the City's portfolio between FY2011 and FY2023.

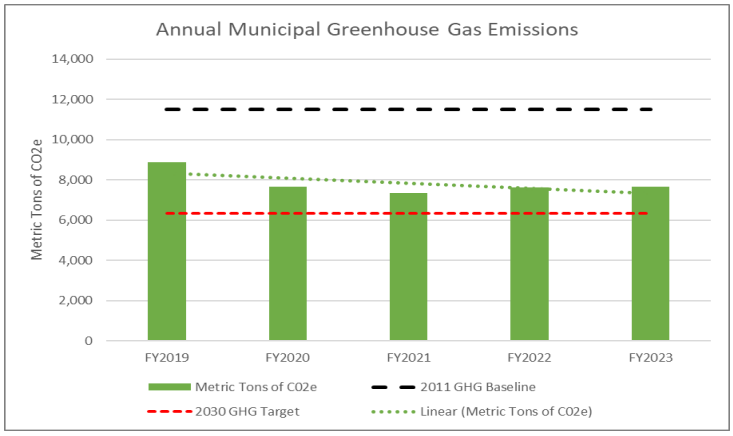


Figure 2: *Greenhouse gas emissions for the past 5 fiscal years, FY2011 baseline year, and 2030 GHG Target across all City and school facilities.*

Most municipal building groups had, on average, a lower energy use intensity (EUI) and water use intensity (WUI) in FY2023 compared to the regional average for their representative building groups, which represents a trend in a more efficient direction.

- As of FY2023, the portfolio as a whole has achieved **an 8.7% reduction in EUI from the FY2011 baseline** reaching 63.1 kBtu/sq.ft. This puts the City at 21.3% left to reduce to reach the 30% reduction goal of 48.3 kBtu/sq.ft. by 2030.
- Overall, there is **a 25.5% reduction in WUI from the FY2011 baseline year**. This puts the City only 4.5% away from meeting its 30% reduction goal of 12.85 gal/sq.ft. by 2030.
- Since 2011, the portfolio has seen some fluctuation but mostly a downward trend **achieving 33.4% reduction in greenhouse gas emissions by FY2023** due to electric grid transformation (Figure 2).

FY23 Program Actions and Highlights

Operational Actions

- Continued to implement **demand-side management** strategies through building automation systems (BAS) and **review of HVAC schedules** to ensure buildings were operating efficiently.

Technological Actions

- Finalizing an **Energy Performance Contract (EPC)** to be available for use in energy improvement projects for over 40 city government and school facilities; developing initial projects.
- Continued to **replace lighting**, **replace HVAC equipment**, and **improve the building envelope** across various facilities including the start of roof replacement at Charlottesville High School.
- **EnergyCAP Utility Tracking Software** is used to track and manage all utility accounts. A data dashboard can be viewed at EnergyCAP FY2023 City Performance Report Dashboard (LINK).

Behavioral Actions

- **Employee Outreach and Engagement** is an essential component of the EWMP including reminders to not use space heaters and unplug/shut down electronics during the holiday break.
- Continued **Energy and Water Management Campaign at CCS** through announcements and activity sheets for students and staff, light switch reminders, and direct outreach efforts in the classroom including proving Climate Action Kits to all 5th graders.