City of Charlottesville Fiscal Year 2024 Annual Energy and Water Performance Report - CCS Executive Summary

The City of Charlottesville's Energy and Water Management Program (EWMP) monitors and manages energy and water usage at all municipal and school sites. It has continued its strong partnership with Charlottesville City Schools (CCS) set in place by the energy and water saving goals in the 2019 Resolution for Charlottesville City Schools Energy and Water Performance. This summary highlights notable actions and findings for CCS from the **City of Charlottesville FY2024 Annual Energy and Water Performance Report (LINK).**

Utility Reduction Goals

Energy Reduction Goal - 30% reduction in Energy Use Intensity by FY2030

Water Reduction Goal - 30% reduction in Water Use Intensity by FY2030

Climate Action Workplan Alignment

The EWMP continues to work towards meeting their energy and water reduction goals to help the City make progress to meeting their larger greenhouse gas emissions reduction goals and Climate Action Plan commitments. The **City's Climate Action Plan (LINK)** presents strategies and key actions to reduce municipal greenhouse gas emissions by switching to lower emissions fuel sources and by reducing energy use through efficiency and conservation measures. Solar power generation has been identified as the primary renewable energy technology to be deployed, and multiple avenues for adding more capacity are being explored. These include internal funding and power purchase agreements (PPAs) to install solar energy systems onsite at facilities as well as consideration of accessing offsite solar through virtual power purchase agreements (VPPAs).

FY2024 Key Performance Findings

The City's performance for FY2024 provides a clear view of building performance post COVID-19. **In FY2024, the school portfolio spent $1.49 million on energy and water utilities** (Figure 1)**,** accounting for 40% of Charlottesville municipal utility spending. The increase in utility costs is associated with rising utility rates, facilities being run with higher ventilation rates, and overall increased utility usage. When compared to the portfolio's baseline year of FY2011, there was a 43% increase in total utility costs. With respect to utility consumption, there was a 3% decrease in electricity, a 2% decrease in natural gas, and 10% decrease in water.

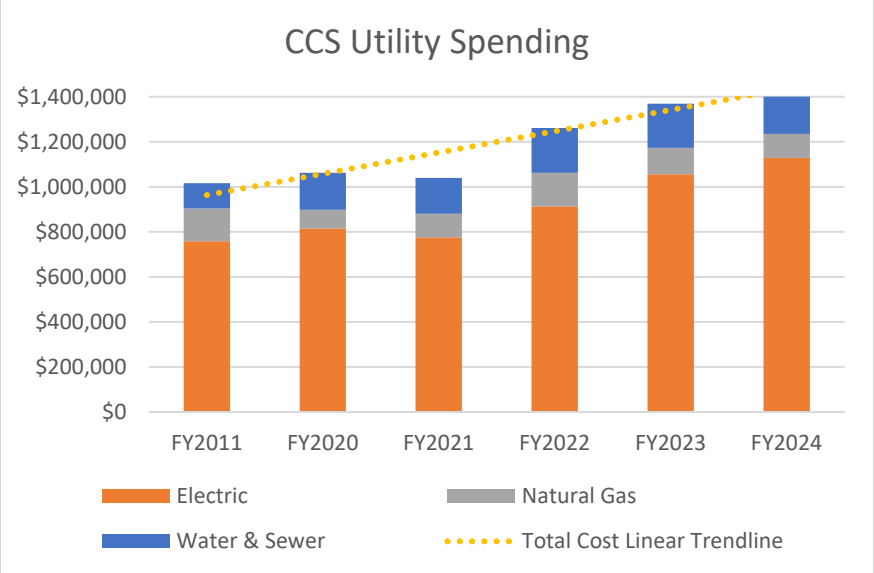

Figure 1: *Charlottesville City School's utility spending for the past 5 fiscal years and FY2011 (baseline year) for each commodity type across all school facilities.*

Many CCS school buildings had, on average, an energy use intensity (EUI) and water use intensity (WUI) in FY2024 close to the regional average school buildings.

- For FY2024**, CCS buildings had an average EUI of 50.1 kBtu/sq.ft. which is nearly the same EUI as the FY2011 baseline**. Therefore, schools need to reduce their EUI by 30% (across all schools) to reach the 2030 reduction goal of 35 kBtu/sq.ft. (Figure 2).
- Overall, **there has been a 11% reduction in WUI when comparing FY2024 to FY2011 baseline year.** CCS needs to reduce its WUI an additional 19% by 2030 to reach the 30% reduction goal of 8.2 gal/sq.ft. (Figure 3). It is anticipated that replacing any water wasting fixtures with water efficient specifications will help CCS reduce usage by 18%, meaning that the remaining savings will need to come from behavioral changes to save water.
- An ENERGY STAR score of 75 is needed to apply for ENERGY STAR certification. In FY2023, **two out of ten schools have reached the 75 score** (Table 1). Our goal is to have all ten schools reach a 75 score by 2030.

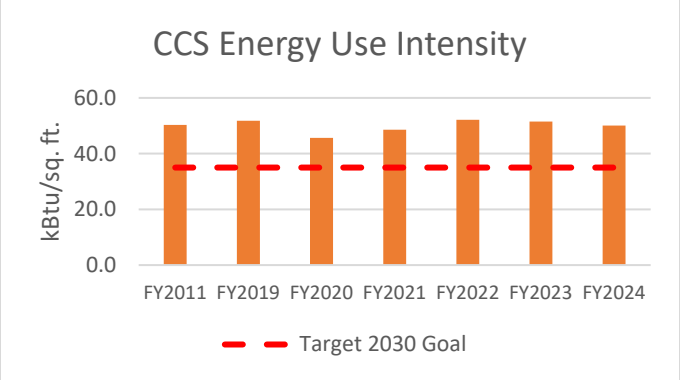

Figure 2: *Annual municipal weather-normalized EUI. Red dashed line notes the FY2030 target of 30% reduction from the baseline year, FY2011.*

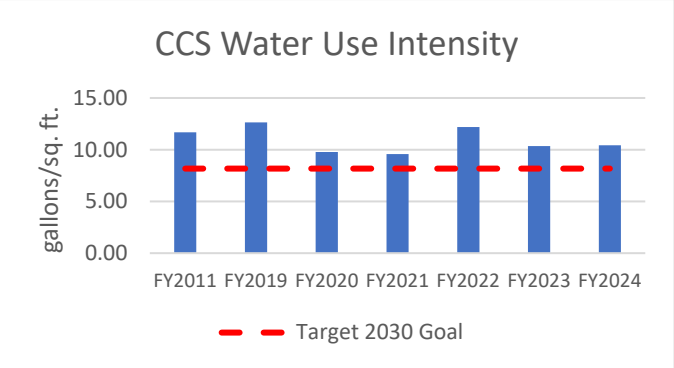

Figure 3: *Annual municipal WUI. Red dashed line notes the FY2030 target of 30% reduction from the baseline year, FY2011.* ***Note:*** *irrigation accounts were omitted.*

The CCS portfolio has seen a downward trend in greenhouse gas (GHG) emissions since the FY2011 baseline. With major reductions seen in energy usage at CCS facilities in 2020 due to COVID-19, GHG emissions saw a sharp decline (28.0%). The portfolio then saw a gradual increase in GHG emissions in FY2021 (1.4%) and then a larger increase in FY2022 (8.9%) as facilities returned to more normal occupancy levels. Since FY2022 the portfolio has seen a decline in GHG emissions, 1.1% in FY2023 and then achieving a 6.3% reduction in FY2024 (Figure 4). The cleaning of the electric grid as well as energy conservation measures such as lighting upgrades have played a role in the reduction in greenhouse gas emissions. The EWMP will continue to monitor this in FY2025.

School Facilities	ENERGY STAR Score		
	FY2011	FY2023	FY2024
Buford Middle School	36	34	45
Burnley-Moran Elementary School *(ES Cert. 2009)*	67	68	73
Charlottesville High School *(ES Cert. 2009)*	61	57	61
Summit Elementary School *(ES Cert. 2009)*	47	28	50
Greenbrier Elementary School *(ES Cert. 2009)*	61	64	65
Jackson-Via Elementary School *(ES Cert. 2009)*	45	48	49
Johnson Elementary School *(ES Cert. 2009)*	79	75	77
Lugo-McGinness Academy	**	86	83
Trailblazer Elementary School	52	48	65
Trailblazer School Annex	1	14	19
Walker Upper Elementary School	33	19	23

Table 1: *CCS benchmarked facilities and ENERGY STAR scores for FY2011 (baseline year), FY2023, and FY2024.*

FY2024 CCS Program Actions and Highlights

Operational Actions

- Conducted monthly meetings of EWMP and CCS staff to discuss operations and utility performance of CCS facilities.
- Continued to implement **demand-side management** of the facilities building automation systems (BAS) and **review HVAC schedules** to ensure buildings were operating efficiently.

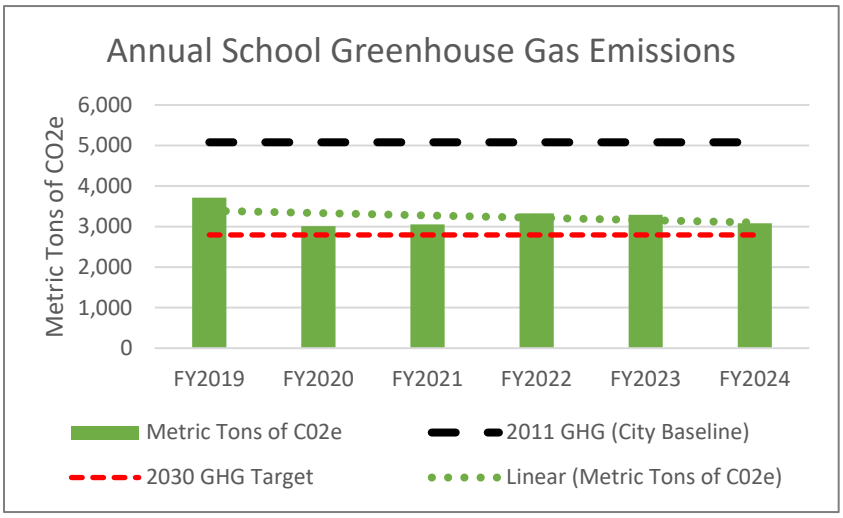

Figure 4: *Greenhouse gas emissions for the past 6 fiscal years, FY2011 (baseline year), and 2030 GHG Target across all school facilities.*

Technological Actions

- Continued to **replace lighting**, **replace HVAC equipment**, **and make improvements to building envelope** across various facilities including the start of a roof replacement at Charlottesville High School.
- Charlottesville High School received numerous **energy and water upgrades** in FY2024. These included LED installations in the large gym, a portion of the Media Center, and throughout breezeways. Plans for lighting upgrades covering the rest of the school are in development. Phase 1 of the roof replacement was completed in summer 2023 and Phase 2 started in summer 2024. Additionally, a set of restrooms were reconfigured to a single unisex configuration with water efficient fixtures.

Behavioral Actions

- The EWMP has developed energy and water education tailored for CCS curriculum and has incorporated lesson plans into the **CCS Science Pacing Guide**. These materials are available to all science teachers with the resources necessary to deliver the activities.
- In May 2024, 320 5th graders at Walker Upper Elementary School received **Climate Action Activity Kits** created by the Community Climate Collaborative (C3) and the Virginia Discovery Museum in partnership with the EWMP.
- Visited Greenbrier Elementary's 4th Grade Global Guardians Conservation Showcase focused around "**Think Global, Act Local**" water and energy saving actions.

A Dashboard of all the data included in the FY2024 City Annual Performance Report with interactive options and detailed data can be viewed at EnergyCAP FY2024 City Performance Report Dashboard.