



Fairfax County Public Schools
Greenhouse Gas Inventory Report
For
Calendar Year 2022

Fairfax County Public Schools
Office of Facilities Management

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FCPS Energy Management Section

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2 Background

2.1 Fairfax County Public Schools Policy 8542 on Environmental Stewardship

On November 7, 2008 the Fairfax County School Board adopted policy 8542 on Environmental Stewardship. The policy purpose states:

FCPS is committed to continue to take innovative and cost-effective steps to help our country achieve climate stabilization. This policy is intended to prioritize the practices to be developed and implemented by staff members in order to address global warming and to meet other important environmental stewardship initiatives.”

The policy further states:

“IV. CARBON REDUCTION

Carbon reduction is the most important environmental concern, and FCPS is committed to reducing energy consumption wherever possible both to take advantage of its benefits to the environment and to reduce energy expenses.”

Finally, the policy includes:

“XII. PERFORMANCE MEASURES

Staff members shall create an inventory of greenhouse gas (GHG) emissions and implement policies, programs, and operations to further achieve measurable reduction and help contribute to regional reduction targets. Annual performance measures shall be instituted.”

2.2 Fairfax County School Board Resolution on Climate Change Action

On October 11, 2018 the Fairfax County School Board passed the resolution calling for state and federal action on climate change.

The resolution calls on the members of the Virginia General Assembly and the United States Congress to act on climate change and provide a regulatory framework that removes barriers to progress on climate action and encourages the rapid replacement of fossil fuels with renewable energy technology. It also directs the Superintendent to report timely to the Board changes in state and federal policy that support the goal of reducing carbon consumption, along with staff proposals to make best use of those opportunities in facilities and transportation planning.

2.3 The Joint Environmental Task Force 2021

The Joint Environmental Task Force, or JET, formed in April 2019 by the Fairfax County Board of Supervisors and the Fairfax County School Board. The JET's mission is to join the political and administrative capabilities of the county and the school system to proactively address climate change and environmental sustainability. The Fairfax County School Board has accepted the recommendations of the Joint Environmental Task Force (JET) to set a goal for the school division to become carbon neutral by 2040. The final meeting of the JET was held in October 2020 and outlines 28 recommendations that address:

- **Energy:** The school division agrees to decrease total energy usage from all facilities by 25% by 2030, and 50% by 2040.
- **Solid Waste and Recycling:** Fairfax County government and schools set an aspirational goal to be at zero waste by 2030.
- **Workforce Development:** FCPS will develop a plan to educate students about green career opportunities, including inviting green career professionals to career days and student interview days. The schools will also work with local solar installers to investigate solar-related job opportunities for new high school graduates.
- **Transportation:** Fairfax County Public School Board agrees to transition to electric (or other non-carbon emitting) alternatives by 2035, and to develop a plan to fuel the electric vehicles using non-carbon emitting fuels and carbon offsets with a complete transition to 100% clean fuel by 2030.

2.4 What is a Greenhouse Gas Inventory?

A greenhouse gas (GHG) inventory is an accounting of the amount of greenhouse gases emitted to or removed from the atmosphere over a specific period of time (e.g., one year.) A greenhouse gas inventory also provides information on the activities that cause emissions and removals, as well as background on the methods used to make the calculations. Policy makers use greenhouse gas inventories to track emission trends, develop strategies and policies and assess progress. Operations managers use GHG inventories to evaluate a project or program's impact and to prioritize projects. Scientists use greenhouse gas inventories as inputs to atmospheric and economic models. FCPS uses GHG inventories to manage GHG risks and identify reduction opportunities.

2.5 Greenhouse Gas Inventory Protocols

The World Resources Institute (WRI) and the World Business Council for Sustainable Development developed "The Greenhouse Gas Protocol," an international framework to understand, quantify, and manage greenhouse gas emissions. The Climate Registry worked with the WRI GHG team to develop its "Local Government Operations Protocol," which provides a consistent framework for local governments across North America to measure and publicly report their greenhouse gas emissions.

3 FCPS Greenhouse Gas Emissions for Calendar 2022

FCPS has made significant progress in reducing greenhouse gas emissions over the years. Some highlights for calendar year 2022 are:

- In 2022, FCPS increased Greenhouse Gas emissions by 3,522 metric tons of CO₂e compared to the previous year (2021). Although there was an increase of 2% in GHG emissions from 2021-2022, it's important to note that this is a relatively small increase considering the overall trend. FCPS achieved a reduction of over 38% in GHG emissions compared to the baseline year of 2008, and demonstrates a proactive approach to mitigating climate change.
- GHG emissions decreased from 2019 to 2021 continuing the overall trend for the thirteen years since the first inventory was started for calendar year 2008. From 2008 to 2021 GHG emissions have decreased 39%. This overall decrease has occurred even though the number of students, the total square footage of buildings, and the number of school buses has continued to increase.
- FCPS had over 28 million square feet of building space where utilities were paid and controlled by FCPS. Leased building spaces where utilities are included in the rent are included in this inventory.
- The number of students in FCPS increased to 180,130.
- 262 million kWh of electricity were used for lighting, heating and air conditioning, kitchen equipment, and plug loads such as computers, televisions, smart boards, and vending machines. This is an increase of 12 million kWh of electricity or 4% from 2021, but an overall decrease in electricity usage of 18% since 2008, which is a positive trend indicating improved energy efficiency and conservation efforts.
- 5.3 million therms of natural gas were used for heating, domestic hot water, kitchen equipment, and emergency power generation. Despite the increase of .6 million therms from the 2021 consumption, there has been an overall decrease of 25% in natural gas consumption since 2008.
- FCPS had 2,473 vehicles in 2022 that consumed fuel, including 1,607 buses and 127 cars, 723 trucks, and 16 non-road vehicles.
- FCPS school buses traveled 15,894,699 miles which is an increase of 4,084,239 miles traveled in 2021, and a decrease of 5,408,615 miles or 31% traveled in 2019.
- FCPS school buses used 2,414,944 gallons of diesel fuel in 2022.
- FCPS Grounds Operations department continue to replace gasoline powered equipment with diesel powered equipment adhering to EPA's Tier 4 (T4) emission standard when equipment is due for replacement. We fully expect to have over 50 blowers in operation within a year, and that number will increase as the machinery finishes its useful life cycle. OFM grounds plans to continue replacing gasoline powered hedge clippers to battery powered as they end their useful lifecycle.
- FCPS achieved a reduction of 37% in GHG emissions between 2008 and 2022. To visualize the environmental impact of the reduction, this reduction of 90,975 metric tons of CO₂e is equivalent to the GHG emissions from the electricity use of 17,701 homes for one year or GHG emissions avoided by recycling 31,479 tons of waste instead of sending it to landfills.

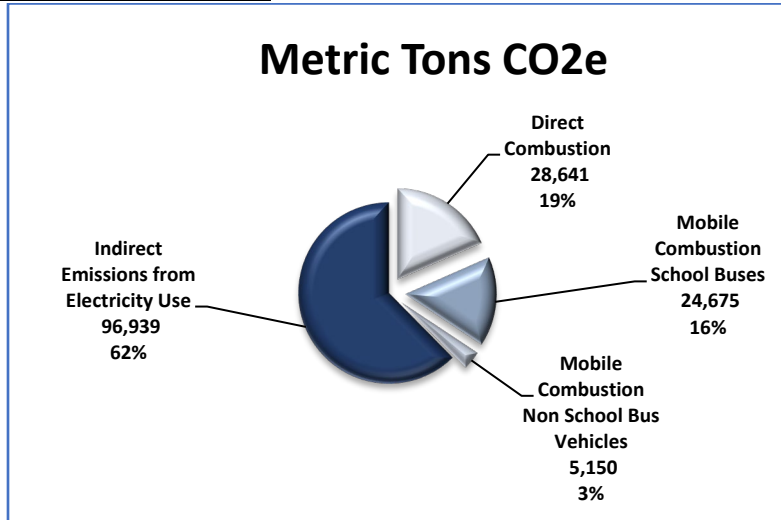
- The reforestation of areas on school sites helps mitigate storm water runoff by absorbing water. Drought-resistant trees and plants native to this region are used because they are suited for this climate and do not require irrigation. The trees absorb carbon dioxide and assist with improved air quality around the schools. Over 1,500 trees and over 4,100 shrubs were planted by FCPS in the past two years. With few exceptions, only native and non-toxic fruit bearing vegetation was planted. No invasive species were planted, and in most cases, existing invasive species are removed using procedures prescribed by Fairfax County’s Urban Forest Management Department. GHG emissions by major categories are shown in Figure 1, with percentages by category shown in Figure 2. Refer to Appendix 1 for scope category definitions.
- It’s important for FCPS to continue efforts to reduce GHG emissions, as these reductions are crucial in addressing the global issue of climate change and contributing to a more sustainable future.
- Fugitive refrigerant emissions have been removed from GHG reports for FCPS. This was done because it was determined that this data has not been collected in a meaningful way and FCPS does not have a process in place for accurate collection of this type of data. Historical reports will remain as previously published, however the chart below and all data in this report reflect accurate data from all other sources.

Figure 1: CO2 2008 – 2022

2008-2022 Greenhouse Gas Emissions in Metric Tons CO2e															
Source	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Direct Combustion	38,761	39,045	35,860	35,142	31,162	37,800	40,112	37,462	27,756	26,820	31,487	29,894	27,202	25,360	28,641
Mobile Combustion School Buses	28,981	28,306	28,231	28,234	28,486	29,069	29,095	28,466	28,756	29,867	28,740	28,813	8,786	19,860	24,675
Mobile Combustion Non School Bus Vehicles	4,969	4,679	4,977	4,985	4,971	4,965	4,662	4,686	5,045	5,114	5,393	5,419	3,776	5,047	1,018
Indirect Emissions from Electricity Use	169,038	164,274	164,777	148,481	146,332	153,553	149,851	123,207	109,894	101,527	103,770	94,469	76,226	92,635	96,939
Total Emissions	242,247	237,332	235,448	218,026	212,459	227,454	224,791	194,983	185,554	171,083	178,193	167,167	121,165	147,750	151,272

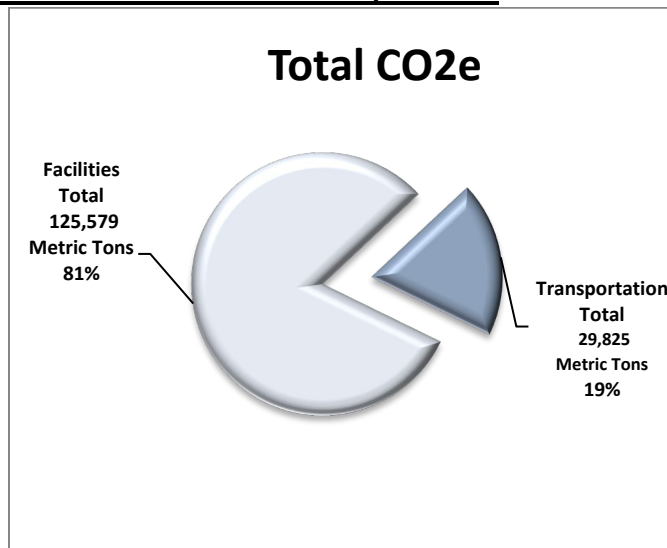
In 2022, GHG emissions associated with buildings including schools, offices, and support facilities account for 81% of overall emissions. Facility related emissions are made up of indirect emissions from electricity use and direct emissions from burning fossil fuels.

Figure 2: CO2 Breakdown



Burning fossil fuels for transportation accounts for 19% of overall emissions with school buses making the majority of the transportation related emissions. FCPS school buses traveled more than 15.8 million miles in 2022. The amount of GHG emissions from transportation is small relative to emissions from facilities. The burning of coal and natural gas for electricity generation is by far the largest source of FCPS’s GHG emissions.

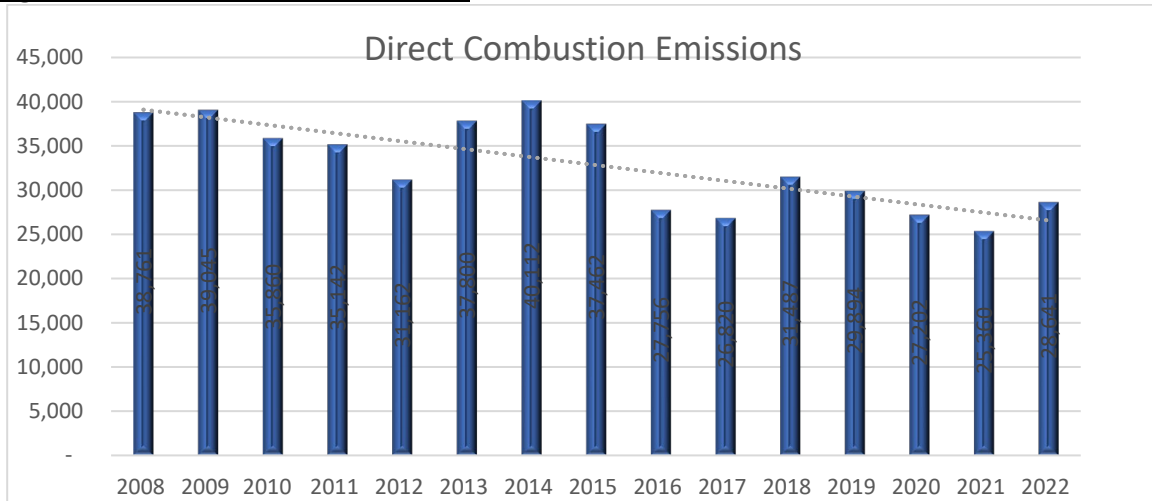
Figure 3: CO2 Facilities vs Transportation



4 FCPS Greenhouse Gas Emissions Fourteen-Year Trend

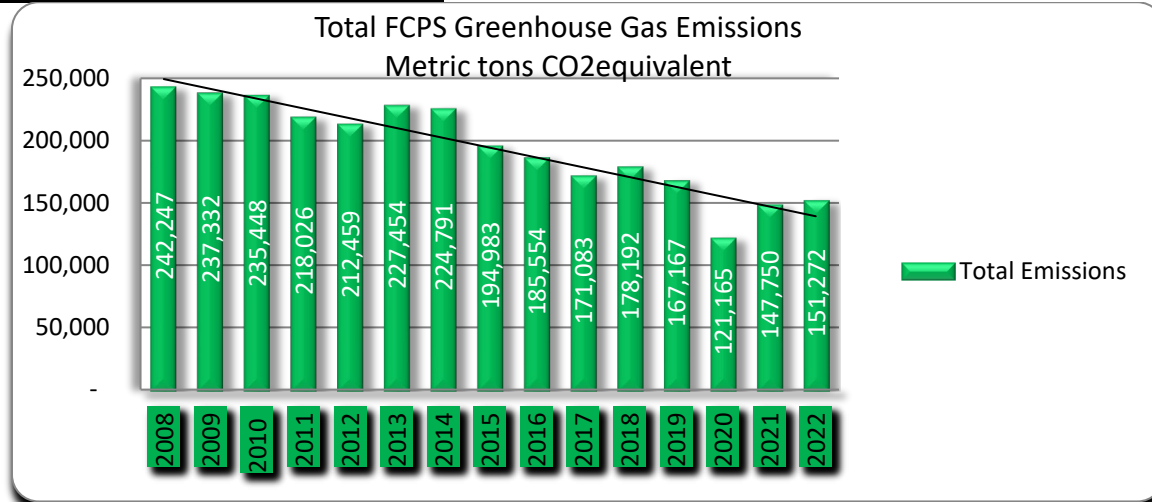
Figure 4 shows the fourteen-year trend for Direct Combustion GHG emissions for FCPS. From 2008 to 2022 GHG emissions have decreased 26%. It is notable that student population, building space, and the size of the transportation fleet have all grown significantly during this fourteen-year period while emissions have decreased.

Figure 4: CO2e Direct Combustion



The total GHG emissions shown in Figure 4A include Scope 1 Emissions and Scope 2 Indirect Emissions associated with FCPS consumption of purchased electricity. The utility generation fleet has become less carbon intensive over this fourteen-year period as utilities have increased use of natural gas as a fuel source and decreased use of coal.

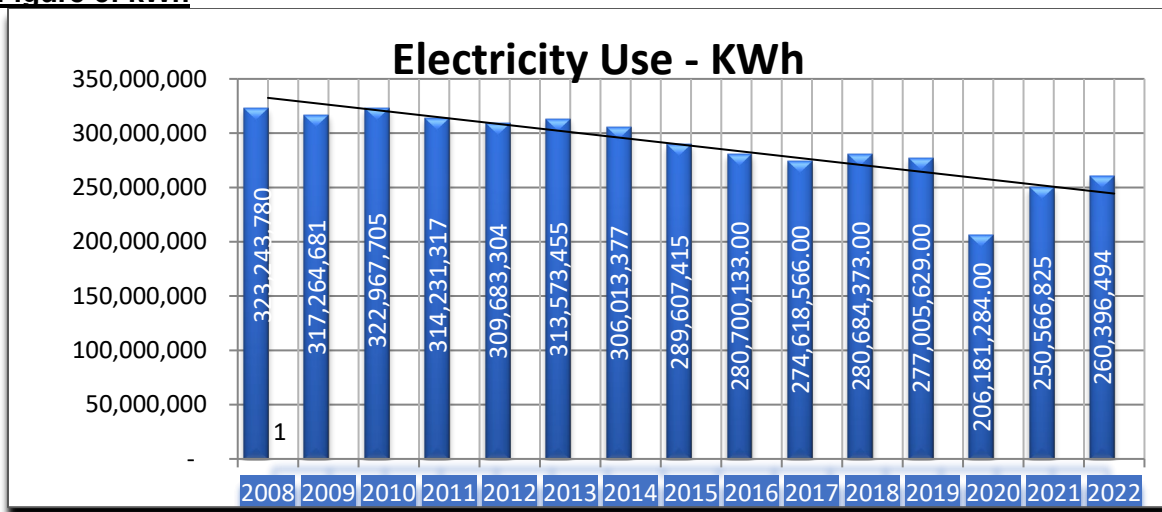
Figure 4A: Total GHG emissions



It's notable that despite the increase compared to 2020 and 2021, emissions and energy usage in 2022 are lower than in 2019. It's also positive to note that there has been a consistent trend of energy conservation since 2008. This indicates FCPS' efforts to reduce energy consumption and promote energy efficiency have been effective over the long term. To better understand these trends and their implications, it's essential to consider various factors, including changes in technology, government policies, and societal awareness regarding climate change and energy conservation. Additionally, it's crucial to monitor these trends over time and assess whether they align with broader sustainability goals and targets.

Figure 5 shows the total electricity consumption of all FCPS facilities. A portion of electricity use is dependent upon weather, especially seasonal summer temperatures.

Figure 5: kWh

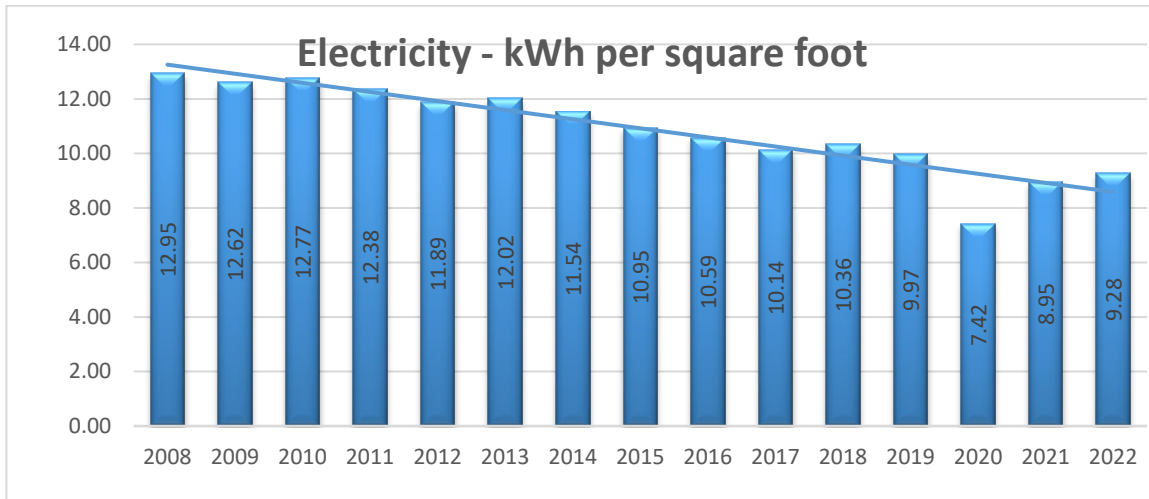


Most of the electricity is used in FCPS buildings for heating, air conditioning, lighting, and cooking. The amount of consumption depends on the size of the building space, the occupancy schedule, and the weather. A portion of electricity is used for plug loads like computers, smart boards, photocopiers, or vending machines. Electricity is also used for exterior parking lot, security, and athletic field lighting.

Using electricity and gas use per square foot of building space as an indicator of overall building energy efficiency is a common practice. This metric helps assess how efficiently a building is using energy to support its functions and occupants. The site energy usage for FCPS has shown a decrease from 2008 to 2022, suggesting improved building energy efficiency.

Figure 6 shows that electricity per square foot of building space has continued the overall decline by 28% since 2008.

Figure 6: kWh/ft²



Natural gas is used primarily for heating buildings with some small portions used for domestic hot water, cooking, and emergency generators. Natural gas use, therefore, is highly dependent upon winter weather conditions.

Figure 7 shows that the total use of natural gas has decreased by 24% since 2008.

Figure 7: Therms

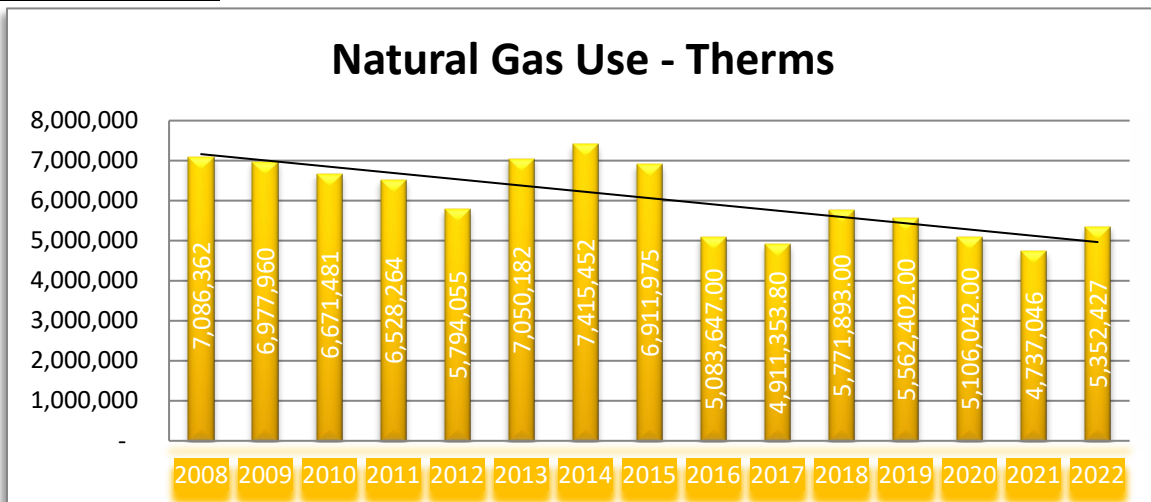
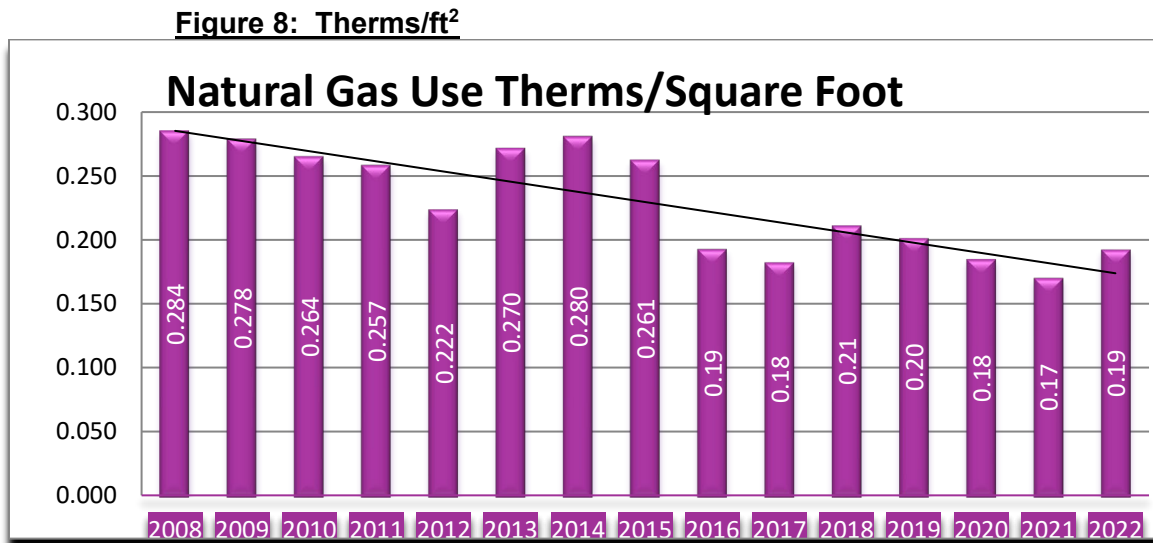


Figure 8 shows that natural gas per square foot of building space has continued the overall decline by 33% since 2008.



FCPS is making significant strides in improving its building energy efficiencies through various strategies and operational improvements. These efforts are not only environmentally responsible but can also result in substantial cost savings over time.

- Design Strategies: FCPS has incorporated energy efficient design strategies in construction and renovation of its buildings.
- Operational Improvements: Optimizing HVAC systems, implementing lighting controls, and ensuring building occupants are educated about energy conservation practices.
- Capital Investments: Investing in energy efficient mechanical and electrical equipment and systems.
- ENERGY STAR Rankings: FCPS is actively tracking and benchmarking its building' energy performance. This is a recognized way to measure and compare energy efficiency in buildings.

FCPS's comprehensive approach of reducing energy consumption decreases the burning of fossil fuels, a primary source of greenhouse gas emissions. This reduces the carbon footprint associated with the energy required to operate school buildings. FCPS sets an example for students and the community by demonstrating the importance of sustainability. Teaching students about energy conservation and environmental responsibility can have a long-term impact on greenhouse gas reduction as they carry these lessons into their lives. While the primary goal is sustainability, the cost savings resulting from energy-efficient measures can be reinvested in further sustainability initiatives or in educational programs, indirectly contributing to greenhouse gas reduction efforts.

Figure 9 shows how total greenhouse gas emissions have been steadily decreasing while the square footage has been steadily increasing.

Figure 9: GHG/SQFT

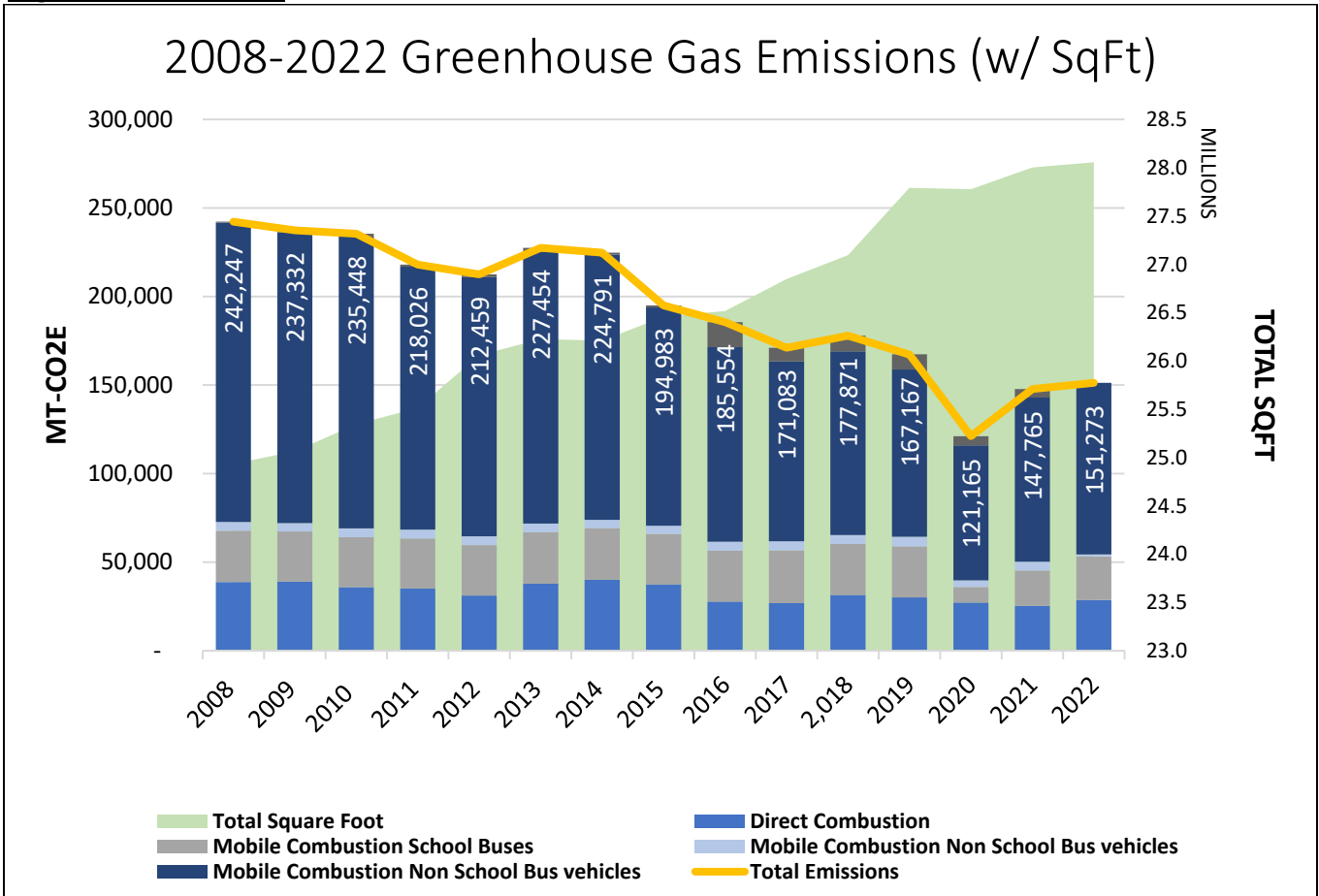
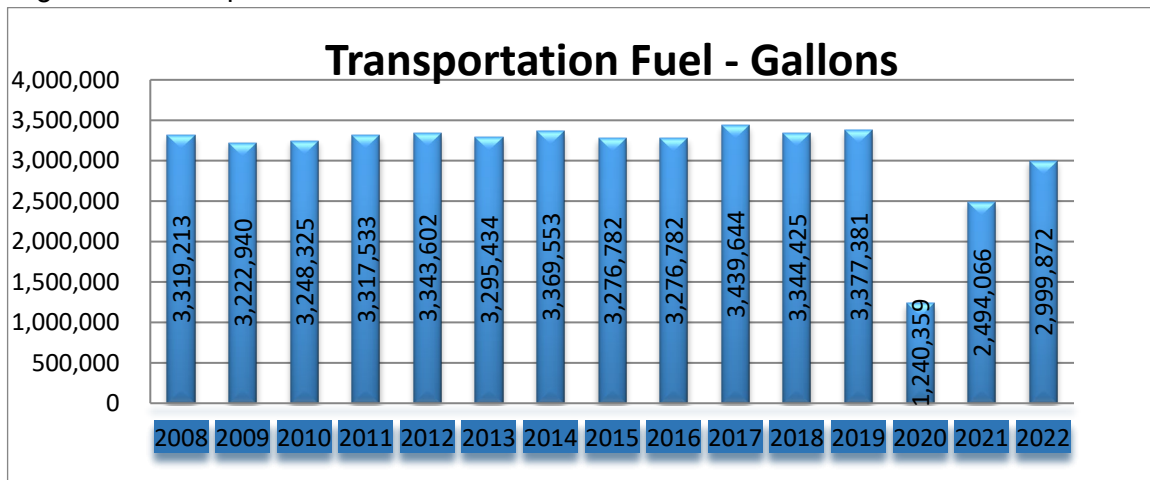


Figure 10 indicates the fourteen-year trend for transportation fuels.

Figure 10: Transportation Fuel



5 Energy Management Section

Energy Management is integrated throughout FCPS in various ways.

The energy management section is led by an Office of Facilities Management (OFM) Coordinator and includes a team of fourteen Energy Education Specialists. These staff members are tasked with involving all members of the FCPS Energy Education Team (anyone who utilizes an FCPS facility - students, staff, parents, and other community members) to focus efforts to ensure efficient and effective stewardship of public resources (both economic and environmental) through continually striving to reduce energy use and cost without negatively impacting health and safety, the educational environment, or productivity. This team also supports a successful internship program to encourage workforce development in this emerging job market. The Energy Education Specialist's focus on energy conservation is achieved through behavior management and education with the following objectives:

- Coordinate energy savings efforts and implement appropriate best practices.
- Evaluate and utilize the most effective energy providers and rates.
- Report on program efforts and status via various media and methods.
- Prepare energy budget draft for district leadership.
- Oversee accurate execution of energy billing and payment functions.
- Research and recommend energy efficient methods and materials.
- Utilize accounting software to manage energy usage and cost data.
- Develop and maintain professional and industry contacts.
- Seek program improvement through staff development.
- Implement methods for measuring and recognizing success.
- Produce and provide appropriate extracurricular instructional opportunities.

The infrastructure and environmental engineering section is led by an OFM Coordinator and includes a team of two engineers and two field construction representatives who focus their efforts on replacing outdated and antiquated building automation systems (BAS) with new systems that utilize top of the line technology and newest developments in the industry. To employ the capabilities of the newest available technology, as part of the BAS replacement projects, energy engineers develop sequences of operations for the equipment that help buildings achieve maximized energy savings while ensuring occupants' safety and comfort meeting all the applicable Association of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) standards. When applicable, the controls systems replacements are used as enhancements to mechanical system replacements. In addition, mechanical system repairs and/or upgrades are used to enhance the replacement of controls. By housing this team with the group which performs all the major maintenance capital asset replacements, the best outcomes are possible.

The operations section is led by an OFM Coordinator and includes seven Building Automation Systems (BAS) Controls Technicians. These technicians are based in each of the four satellite maintenance shops and are responsible for maintenance, repair, and operation of BAS hardware such as controllers, sensors, and control wiring. Their normal work is assigned daily by the Assistant Manager of each satellite; however, they are also supported by a Technician Supervisor who reports directly to the operations Coordinator and allows for the team to be redistributed to respond to work orders that affect BAS controls as needed across the entire school division. In addition, there are two Energy Systems Specialists who also report directly to the operations Coordinator to address software, programming related issues, server maintenance, network access, as well as small modifications and upgrades to the existing BAS.

In addition to the work above, all energy management work is publicized and integrated into instruction through the FCPS Get2Green program. Get2Green is the award-winning environmental stewardship program for FCPS and is a collaboration between multiple departments, schools, and teams, including energy management. Get2Green is co-led by a Coordinator in OFM and a Manager in Instructional Services and is supported by an Educational Specialist, Support Specialist, and four Resource Teachers in Instructional Services. The Get2Green team works with Get2Green Leaders in each school and collaborates to expand equitable access to meaningful learning experiences centered on the environment. The [Get2Green website](#) has information about environmental stewardship in FCPS; data dashboards with energy, natural gas, water, greenhouse gas, recycling, and trash data for each school; and resources to support educators engaging students in environmental stewardship.

6 FCPS Sustainability and Energy Conservation Efforts and MWCOG Regional Climate and Energy Action Plan

Energy conservation measures and strategies undertaken by FCPS reflect the goals set by the Metropolitan Washington Council of Governments' (COG) Climate, Energy and Environment Policy Committee (CEEPC). CEEPC guides the region of the District of Columbia, suburban Maryland, and Northern Virginia in taking action to meet regional GHG emission reduction goal. The goals and actions are outlined in the Regional Climate and Energy Action Plan. Several actions taken by FCPS are outlined below.

6.1 Reduce energy consumption.

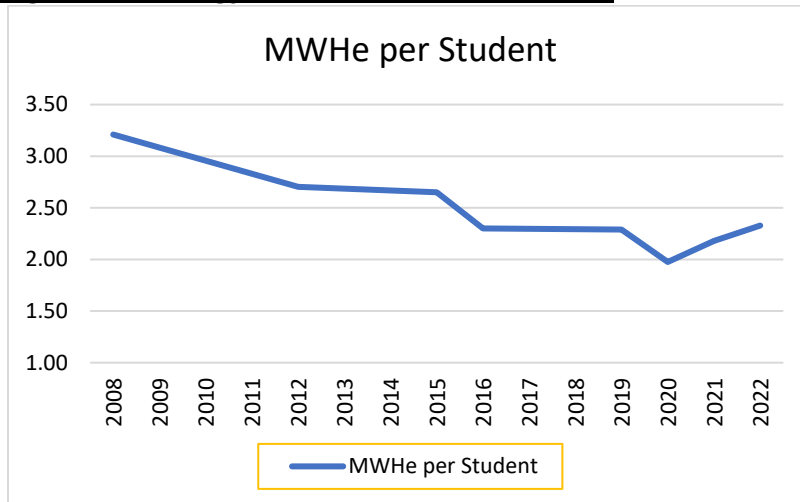
6.1.1 Electricity and natural gas consumption

As stated in the Action Plan, "Sustained continuous reduction of consumption will be a crucial component of meeting the region's GHG emission reduction goals". FCPS has achieved an impressive 36% reduction in GHG emissions from 2008 to 2022. This

reduction is aligned with the regional goal of reducing GHG emissions and is a positive step toward mitigating climate change.

As the energy consumption per capita within the region has decreased by 24% between 2005 and 2020, the consumption per FCPS student has decreased as well. Between 2008 and 2022 the energy consumption per student decreased to 2.33 MWHe or 27%. Figure 11 illustrates this pattern.

Figure 11: Energy Consumption per Student



6.1.2 Prepare GHG inventories and action plans.

FCPS has been preparing yearly GHG emission inventory reports since 2008 pursuant to Policy 8542. The policy states that FCPS staff shall implement policies, programs, and operations to further achieve measurable reduction and help contribute to regional reduction targets.

6.1.3 High performance buildings

Energy performance of all FCPS schools, instructional, and administrative centers is benchmarked using ENERGY STAR Portfolio Manager. FCPS earned the ENERGY STAR PARTNER OF THE YEAR award from the US Department of Energy in 2017 and 2018. In 2019, 2020, 2021, 2022 and 2023 FCPS earned the ENERGY STAR Partner of the Year—Sustained Excellence Award in recognition of its ongoing energy achievements. This award is given in recognition of superior energy and sustainability performance and practices. 187 FCPS facilities have earned an ENERGY STAR certification at least one time, and FCPS has earned a total of 759 ENERGY STAR certifications. These accomplishments have helped FCPS to play a key role in Washington DC achieving one of EPA’s top-ranking cities for ENERGY STAR certified buildings. In alignment with the Joint Environmental Task Force (JET) recommendations, when possible, beginning in 2021 new buildings and major renovations will be designed to achieve Net Zero Energy (NZE) performance. JET defines an NZE building as one that is highly energy-efficient and produces onsite, or

procures offsite as necessary, carbon-free renewable energy in an amount sufficient to offset the annual energy use associated with operations.

6.2 Renewables

Renewable energy is an increasingly appealing option for school divisions looking to save on energy costs while minimizing environmental impacts. Installing solar panels can decrease schools' electricity rates and shield them from fluctuating energy prices. For teachers, renewable energy is an excellent hands-on educational tool for science, technology, engineering, and mathematics (STEM) subjects that can be incorporated into many content areas. For these reasons, FCPS recently amended its Capital Improvement Program (CIP) to expand the division's commitment towards renewable energy resources. Net Zero Energy (NZE) building designs utilize renewable energy sources; as NZE buildings are planned and designed, the number of renewable energy systems will increase across the division.

6.2.1 Solar Installations

FCPS currently has ten schools with solar installations. Roof-mounted photo-voltaic solar arrays paid for through grants and fundraising can be found at Rachel Carson Middle School, Frost Middle School, Canterbury Woods Elementary, Bailey's Elementary School, and Thomas Jefferson High School. Roof-mounted solar installations for solar thermal heating of potable (drinkable) water can be found at Glasgow Middle School, West Springfield High School, and Thomas Jefferson High School. Franklin Sherman Elementary has a ground-mounted photo-voltaic array. Experimental instructional projects integrating technology include a solar powered wind turbine at Lanier Middle School and a chicken coop with solar panel heat at Twain Middle School. Although these projects do not supply large amounts of energy to the schools, they serve as valuable educational tools. This year, Riverside ES and Jackson MS were selected for the Dominion Energy Solar for Students program. Centreville ES won the award in 2019.

6.2.2 Geothermal Energy in FCPS

Mason Crest ES, a repurposed administrative building, uses geothermal energy for heating and cooling. This geothermal system consists of a well field located under the ball fields near the playground. The geothermal system moves heat from the earth into the building in the winter and pulls heat from the building and discharges it into the ground in the summer. Net Zero Energy (NZE) building designs utilize geothermal systems; as NZE buildings are planned and designed, the number of geothermal systems will increase across the division.

7 Appendix 1 – Climate Registry

This FCPS GHG emissions inventory for calendar year 2022 as well as the previous inventory for calendar years 2009-2021 were developed using the Climate Registry's

“Local Government Operations Protocol” version 1.1 released May 2010. The report for calendar 2008 was based on the more generic Climate Registry “General Reporting Protocol” version 1.1 released May 2008.

Operational Boundaries and Scopes

The protocol categorizes GHG emissions into three “scopes”:

- Scope 1: All direct GHG emissions from burning fossil fuels and from refrigerant leakage.
- Scope 2: Indirect emissions associated with the consumption of purchased electricity.
- Scope 3: All other indirect emissions not covered in Scope 2, such as upstream and downstream emissions, emissions resulting from the extractions and production of purchased materials and fuels, transportation related activities in vehicles not owned or reported by the reporting entity (e.g., employee commuting and business travel), use of sold products and services, outsourced activities, recycling used products, waste disposal, etc.

The Climate Registry’s “Local Government Operations Protocol” requires reporting Scope 1 and Scope 2 emissions while Scope 3 is optional. This report only includes Scope 1 and Scope 2 emissions.

It should be noted that making operational changes to reduce Scope 3 emissions can be a good strategy to reduce overall GHG emissions from FCPS related activities. For example, a successful program that reduces the use of personal vehicles for students and staff to commute and instead carpool or taking a school bus would reduce GHG emissions. This, however, would not affect Scope 1 and Scope 2 emissions.

In general calculating Scope 3 emissions and the impact of changes is more subjective and difficult to accurately determine than Scope 1 and 2 emissions.

Reporting Into a Database

This GHG emissions inventory was prepared to meet the FCPS School Board policy 8542. There is currently no Federal or State rule or law concerning the emissions of GHG or a requirement to report on GHG emission inventories by FCPS. Reporting and registering GHG emission inventories have been done by organizations on a voluntary basis.

Reporting into the Climate Registry requires formal verification of the data for accuracy and methodology by a third party expert. This generally would be a paid consultant specializing in report verification.

Becoming members and reporting GHG emissions to a national database such as the Climate Registry is an option for FCPS or the entire Fairfax County Government. Because of the fluid nature of reporting and the cost of third party verification, not reporting to a database at this time is recommended. FCPS should continue to collect data and inventory GHG emissions annually in order to meet the goals and intent of policy 8542.

Adaptations required to report into the Climate Registry

Baseline year: The Local Government Operations Protocol requires reporters to select a baseline year. Once this baseline is selected, it should not be changed since progress in reducing GHG emissions are compared to this baseline. Since the intent of an inventory program is to track overall emissions, the baseline is not adjusted due to expansion such as an increased number of students, constructing new building space, or increasing the size of the vehicle fleet. This inventory report does not propose a baseline year. Any year could be selected provided that accurate energy use data is available.

Third party verification: Reporting into the Climate Registry requires the reporter to hire a third party expert to verify that the data is accurate and properly reported. This generally would be a paid consultant specializing in report verification.

Greenhouse Gases Reported

The protocol (Climate Registry “Local Government Operations Protocol” version 1.1, May 2010) requires reporting on the following gases:

- Carbon Dioxide (CO₂):
 - Direct combustion of fossil fuels such as:
 - Natural gas used for heating, cooking, domestic hot water, and emergency power generators power.
 - Fuel oil used for heating and emergency power generators.
 - Propane used for heating and emergency power generators.
 - Diesel and gasoline fuel used for transportation vehicles and grounds keeping equipment.
 - Indirect combustion from the use of electricity at generated at fossil fuel power plants.
- Methane (CH₄): Direct and indirect combustion of fossil fuels as listed above.
- Nitrous Oxide (N₂O): Direct and indirect combustion of fossil fuels as listed above.

- Hydrofluorocarbons (HFCs) – Fugitive emissions (leaks) from certain air conditioning and refrigeration equipment.
- Perfluorocarbons (PFCs) – not emitted from FCPS operations.
- Sulfur hexafluoride (SF₆) – not emitted from FCPS operations.

8 Appendix 2 – Policy 8542 .1 (Shown is current policy, please note there is a proposed revision in 2021 to reflect JET recommendations)

FACILITIES

Facilities and Transportation Services

Environmental Stewardship

This policy supersedes Policy 8542.

I. PURPOSE

The world's leading scientists agree that human-induced greenhouse gas emissions are a significant contributor to global warming and that reducing those emissions is one of the most significant challenges confronting the world today. Fairfax County Public Schools (FCPS) is committed to continue to take innovative and cost-effective steps to help our country achieve climate stabilization. This policy is intended to prioritize the practices to be developed and implemented by staff members in order to address global warming and to meet other important environmental stewardship initiatives. We are also committed to educating students and staff members in environmental stewardship responsibilities and to encouraging them to use their critical-thinking skills and communication skills to debate the appropriate measures we need to take in order to be responsible stewards of our environment.

II. SUMMARY OF CHANGES SINCE LAST PUBLICATION

In section IX., wording has been revised to add fluorescent light bulbs.

III. DEFINITION

Environmental stewardship is defined as those policies that reduce energy use and water consumption and result in a smaller carbon footprint. Responsible environmental stewardship enhances the overall environment as well as the classroom environment by reducing noise and improving air quality. Sound policies focus on minimizing pollution and refuse, reducing facility operating costs, and promoting a healthy environment for citizens, students, and staff members.

IV. MISSION

Operating and infrastructure design policies shall be focused on supporting all environmental initiatives approved by the School Board. FCPS shall collaborate and coordinate with local and regional initiatives in an effort to produce an overall positive community impact on the environment.

V. CARBON REDUCTION

Carbon reduction is the most important environmental concern, and FCPS is committed to reducing energy consumption wherever possible both to take advantage of its benefits to the environment and to reduce energy expenses. Energy-efficient heating and cooling equipment, as well as energy-saving lighting and controls, will be employed to meet this goal. We will continue to look for further opportunities to institute programs adding climate control systems, and initiating window replacements.

V. CLASSROOM ENVIRONMENT

Building design will focus on improving student achievement by reducing ambient noise, optimizing classroom acoustics, maximizing natural lighting, and improving air quality. Staff members will help educators develop sustainable curricula by using features and systems of the school facility as teaching aids in order to educate students in the art and science of sustainable design. In this regard, FCPS recently established new academic goals to include the expectation that students understand and model attributes that contribute to an effective and productive community and to the common good of all. FCPS also set the expectation that students be skilled in environmental stewardship.

VI. INDOOR AIR QUALITY

FCPS is committed to establishing and maintaining a healthy environment conducive to effective learning. FCPS has established new ventilation standards to ensure that temperature and humidity are maintained at comfortable levels. During renovations, indoor air quality (IAQ) is tested before construction in order to establish a baseline and is monitored regularly to ensure that quality levels are maintained. During renovations, FCPS observes more stringent IAQ standards than are required by the Environmental Protection Agency (EPA). FCPS has adopted green cleaning practices for FCPS facilities in order to minimize negative effects on IAQ. We have instituted the use of filtration devices on our buffers and vacuums, the use of special entryway mats at all entrances to prevent the spread of dust, the use of treated dust mops, and the use of microfiber cleaning cloths. In the near future, we will phase in the use of Green Seal cleaning products and products with low to no volatile organic compounds (VOC) as new commodities contracts are let.

VII. OUTDOOR AIR QUALITY

To do its part to improve general air quality in the region, FCPS will maximize the use of school buses with green diesel technology using ultra low sulfur diesel fuels and, when

replacing vehicles, FCPS shall give preference to vehicles with improved fuel economy and reduced emissions.

VIII. WATER USE AND MANAGEMENT

Plumbing systems will be designed to minimize water consumption through use of low flow fixtures and metering faucets. New technologies for recycling gray water and rain water for building use and field irrigation shall be evaluated for incorporation into design standards.

IX. RECYCLING

Schools and centers will have mandatory recycling programs for paper products, cans, bottles, and fluorescent light bulbs. Construction waste materials will be separated and recycled. Local recycled-content and rapidly renewable materials will be used in new schools and renovations when readily available.

X. GROUNDS AND LANDSCAPING PRACTICES

Drought-resistant landscaping will be used to conserve water, and maintenance-free landscaped areas will be installed wherever practical to reduce energy consumption and emissions incurred due to mowing and other maintenance activities. Artificial turf will be installed at schools wherever possible. These fields will result in the savings of millions of gallons of water, minimize the introduction of harmful chemical fertilizers into the ecosystem, and reduce greenhouse gas emissions caused by mowing.

XI. PURCHASING

Acquisition of products and services will be done in accordance with state and local laws, and in support of environmental stewardship, whenever possible. Purchasing decisions will include environmental considerations such as reducing waste and greenhouse gas emissions, minimizing environmental impacts, and using products made with recycled materials.

XII. PERFORMANCE MEASURES

Staff members shall create an inventory of greenhouse gas (GHG) emissions and implement policies, programs, and operations to further achieve measurable reduction and help contribute to regional reduction targets. Annual performance measures shall be instituted.

Policy adopted: November 6, 2008

Reviewed and Corrected: September 26, 2013

FAIRFAX COUNTY SCHOOL BOARD

**9 Appendix 3 – Fairfax County School Board Resolution on Climate Change
Action**

At its business meeting on October 11, 2018, the Fairfax County School Board passed the following resolution:

**RESOLUTION OF THE FAIRFAX COUNTY SCHOOL BOARD CALLING FOR STATE
AND FEDERAL ACTION ON CLIMATE CHANGE**

WHEREAS, an overwhelming majority of credentialed scientists, in the U.S. and abroad, support the finding that climate change is happening and that human activity is a key contributor; and

WHEREAS, if left unaddressed, the consequences of climate change will harm all Americans, most especially children and those living in poverty, and saddle future generations with the costly burden of a dangerously damaged planet; and

WHEREAS, climate instability is a global challenge requiring bold, innovative, and sustained actions at all levels of government, local, state, and federal; and

WHEREAS, the size of Fairfax County Public Schools' physical footprint provides an unparalleled opportunity to advance the use of renewable energy sources and reduce greenhouse gas output in Northern Virginia; and

WHEREAS, pursuant to School Board Environmental Stewardship Policy 8542, FCPS leads the nation in energy efficiency, the development of green building design standards, and award-winning classroom opportunities for student advocacy and learning through the Get 2 Green program; and

WHEREAS, the Fairfax County School Board's commitment to the safety, wellbeing, and future success of all children in our community also demands a high priority on reducing carbon consumption in our decisions regarding capital improvement, energy use, transportation, and other policy priorities within the Board's control; and

WHEREAS, the Fairfax County School Board depends on committed partners in local, state, and federal government to realize our climate action goals, and recognizes the efforts and progress made to date, especially Fairfax County Government's recently announced request for proposals for solar installations on public buildings, to include schools;

NOW, THEREFORE, be it resolved that the Fairfax County School Board: 1) calls on the members of the Virginia General Assembly and the United States Congress to act boldly on climate change and provide a regulatory framework that removes barriers to progress on climate action and encourages the rapid replacement of fossil fuels with renewable energy technology; and 2) directs the Superintendent to report timely to the Board changes in state and federal policy that support the goal of reducing carbon consumption, along with staff proposals to make best use of those opportunities in facilities and transportation planning.

“Recent reports from the United Nations Intergovernmental Panel on Climate Change are disconcerting and will have an impact on our students,” said School Board chair Karen Corbett Sanders. “The Board has been formally committed to leading the way in reducing our carbon footprint through energy conservation and incorporating renewable energy into our capital improvement plan. With this resolution, we recognize the need to work with our State and Federal policymakers to advance a similar policy framework that encourages citizens to embrace renewable energy.”

10. Appendix 4 – JET RECOMMENDATIONS 2021

INTRODUCTION The Joint Environmental Task Force, or JET, was formed in April 2019 by the Fairfax County Board of Supervisors and the Fairfax County School Board. The JET’s mission is to join the political and administrative capabilities of the county and the school system to proactively address climate change and environmental sustainability. In October of 2020, the JET provided its final report which included 28 individual recommendations under four areas of focus: • Energy • Transportation • Waste Management and Recycling • Workforce Development

ENERGY

1. The Fairfax County Board of Supervisors, the Fairfax County Park Authority, the Fairfax County Regional Housing Authority, and the Fairfax County School Board commit to being energy carbon neutral by 2040.
2. Achieve 50% emissions reductions by 2030, as compared to the 2019 baseline.
3. Produce 25% of the County energy use from in-County renewable energy generation by 2030, and 50% by 2040, using 2019 energy use as the baseline.
4. Decrease total energy usage from all County facilities by 25% by 2030, and 50% by 2040, as compared to the 2019 baseline.
5. All new County buildings and major renovation projects beginning planning and design in 2021 and after must achieve Net Zero Energy (NZE) performance as defined below, unless County staff advises the Board prior to the 30% design phase why a project cannot meet the NZE standard. The JET defines an NZE building as

one that is highly energy-efficient and produces onsite, or procures offsite as necessary, carbon free renewable energy in an amount sufficient to offset the annual energy use associated with operations.

TRANSPORTATION

1. The JET recommends that the Fairfax Connector diesel bus fleet and the FCPS fleet be transitioned to electric alternatives by 2035.
2. Determine which vehicles have electric (or other non-carbon emitting) alternatives and transition them by 2035.
3. Necessary charging infrastructure will be installed to scale as fleets grow.
4. Apply for grant funding for electric buses and the affiliated charging infrastructure whenever possible.
5. Develop a plan to fuel these electric vehicles using non-carbon emitting fuels and carbon offsets with a complete transition to 100% clean fuel by 2030.
6. Reserved parking spaces will be marked at each school, admin, and County building for staff (and students as applicable) driving hybrid and electric vehicles.
7. When considering the cost of transitioning to electric alternatives, the social cost of carbon will be factored in with fuel, upkeep, and other reduced costs to assess potential savings and determine breakeven points.
8. FCPS and Fairfax County should coordinate electrification efforts and share charging and maintenance infrastructure whenever possible. Each should develop legislative packages for the General Assembly to help achieve these recommendations.
9. The forthcoming ActiveFairfax Plan should prioritize increasing safe, well-designed, ADA compliant, and interconnected (including with mass transit) options for biking, walking, and running.*
10. Enhance lighting, signage, and other safety features, i.e. lower speed limits where applicable.*
11. Review and mitigate legal and other constraints to promote access and use of bikeshare systems, especially in underserved communities beyond the typical commercial hubs. *
12. Expand and promote programs that incentivize biking and walking to school and work.

13. Develop a plan for adding porta-potties or other restroom options; publicizing and marketing trail systems maps, to business, schools, and the general public; increasing tree canopy for better shade and shelter. *
14. FCPS and Fairfax County should coordinate their efforts internally and with neighboring jurisdictions for a region-wide network. Each should develop legislative packages for the General Assembly to help achieve these recommendations. *

SOLID WASTE AND RECYCLING

1. The JET recommends Fairfax County government and schools set an aspirational goal to be at zero waste by 2030.
2. A trash and recycling audit should be planned and implemented to get a better idea as to what residents and businesses are throwing away and/or recycling.*
3. County government and schools should undertake a review of purchasing: what is being ordered and what is being used, especially paper supplies and other items that could be recycled, and develop a sustainable purchasing program, to include recycled content paper and plastics, elimination of single use plastics, etc. Of particular concern now is the number of electronic devices (laptops, cell phones, and other electronic peripherals) that are needed for teleworking, and how these items are handled when broken or obsolete. Although many devices still have value in the current market after the hard drive is wiped, E-waste must be considered and addressed.
4. Composting is a simple, effective, and environmentally friendly activity that should be a significant part of any zero-waste plan. County government and schools should undertake a strong education program, in multiple languages, about waste and recycling for the general public.
5. FCPS should: find an advocate for recycling/reduction in each school, expand and continue school partnerships with the Green Flag Program of the National Wildlife Federation, seek business sponsorships, and find share school supplies.

WORKFORCE DEVELOPMENT

The JET recommends that FCPS school counselors and career center staff be equipped with a standardized toolkit for talking with students about the range of green careers and the background necessary to enter those careers. Ensure the presence of green career professionals in career days and student interview days.

1. Work with local solar installers to investigate solar-related job opportunities for new high school graduates, those with a two-year degree, and those graduating from Fairfax County job programs. Determine what training is needed for job entry and how jobs can be advertised to the potential employees.
2. Develop a comprehensive plan to offer one or more green career/economyrelated programs for high school students to encourage participation in this emerging job market. Opportunities could include specialized training or certificate programs, job shadowing, internships, and real-world

workforce experience in fields such as electric vehicle maintenance, solar panel installation, LEED Green Associate Certification, sustainable landscaping, and more.

3. Develop a plan to utilize County buildings as learning tools as solar panels are installed, Net Zero building practices are utilized, and the County continues its use of sustainable building and architecture. Ensure building occupants have the opportunities to learn about all the building's sustainable features through educational tools such as signage, dashboards, and interactive models.

*FCPS is not a lead agency on this recommendation