

## 6. CLIMATE AND ENERGY

### **Board of Supervisors Environmental Vision:**

*“The county will continue its leadership and commitment to promote and encourage energy efficiency and conservation efforts and renewable energy initiatives by employees, employers and residents. The county will work with local authorities, businesses, and residents to encourage sustainable reductions of the county’s geographical emissions that will contribute to achieving the targets as identified by the Cool Counties Climate Stabilization Declaration and the Metropolitan Washington Council of Governments. The county will also continue to support attainment of air quality through regional planning and action.”<sup>1</sup>*

### **INTRODUCTION**

Climate change is an important [worldwide crisis](#) as temperatures rise, precipitation patterns change, droughts and heat waves increase, wildfires become more prevalent, hurricanes become stronger and more intense. In summer 2024, intense and prolonged heat and little rainfall created drought conditions in Northern Virginia. Four days in late July were the hottest ever recorded across the globe. [Scientists posit the global temperatures were higher than any time in the last 100,000 years](#). Greenhouse gas GHG emissions from human activities are largely a result of the combustion of fossil fuels, which can persist in the atmosphere for many years. Once GHGs reach the atmosphere, they capture the energy from sunlight that would otherwise radiate out into space. This heat is redirected back to the lower atmosphere raising the temperature of the earth’s surface. Carbon dioxide concentrations have [risen from an average of 280 parts per million \(ppm\) in the 1700’s to 417 ppm in 2021](#). To limit global warming to 1.5°C, [greenhouse gas emissions must peak before 2025 at the latest and decline 43% by 2030](#). In 2023, [the world reached that limit for the first time since before the last ice age](#).

The Paris Agreement of 2015 was adopted by 196 parties at the United Nations Climate Change Conference. The [agreement](#) calls for limiting global warming to 1.5°C above pre-industrial levels. As Figure 6-1 shows, major reductions in GHG emissions will be required to meet the goal of limiting an increase in temperature to 1.5°C. Scientific experts find that [current efforts will not be sufficient to limit the increase in temperature to 1.5° C](#). [Many scientists fear that we may not be able to limit temperature increases until we have experienced an increase of 3°C or 7.4°F](#).

Controlling GHG emissions is more difficult than addressing many other environmental problems because efforts that we take in Fairfax County could be offset by increases elsewhere. Underdeveloped and developing countries legitimately argue that rich countries like the USA and the European Union, counties that historically emitted most or the world’s GHGs, should make greater cuts in their emissions and allow them to

develop their economies. As citizens of one of the richest counties in the country that emitted the most GHGs in history, Fairfax should be a leader in responsibly acting to cut our carbon pollution. Moreover, some populations recognize the wealth that the United States has and are reluctant to dedicate their limited resources to climate change initiatives when they could be building their economies and wealth.

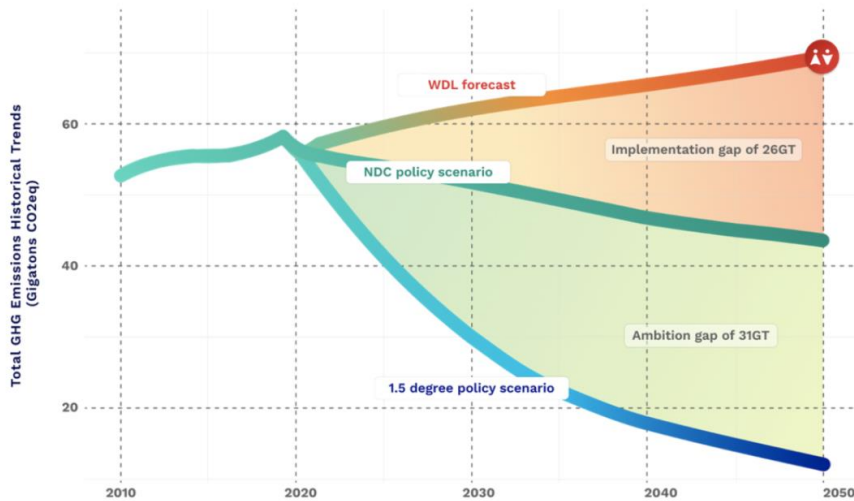


Figure 6-1. With no Change, the Implementation and Ambition Gaps to Addressing Climate Change will Keep Growing (note: Figure created by the [Brookings Institute](#) (the ambition gap commonly describes the gap that exists between the level of ambition of states in terms of their willingness to take ambitious climate action and the degree of action that is in fact necessary to effectively address climate change. WDL (World Data Lab), NDC (Nationally Determined Contributions)).

The United States has released more than 509 Gigatons (Gt) CO<sub>2</sub> since 1850, which is more than any other country. Moreover, among G20 countries (G 20 countries includes 19 other member nations that are major global economies that play a key role in shaping international economic policy), the United States has the 4<sup>th</sup> highest GHG emissions per capita. Given this history of having contributed more GHG both per capita and total GHG overall, it is important that the United States play a leadership role in GHG emissions reductions.

At a national level, there are multiple initiatives to electrify transportation, shift away from fossil fuels to renewable energy, deploy energy efficient buildings, and other actions. States are undertaking programs to reduce GHG emissions. Fairfax County is also joining governmental bodies within and outside the U.S. in taking steps to mitigate the impacts of greenhouse gases (GHGs) on climate.

[The Inflation Reduction Act of 2022 provides federal income tax credits and incentives to encourage energy efficiency by homeowners, home builders and commercial building owners. In particular, homeowners and commercial building owners can receive federal tax credits and deductions through 2032 to include up to 30 percent for installing renewable energy and upgrading the energy efficiency of their buildings.](#)

This has been a difficult year for efforts to reduce GHG emissions as Virginia is no longer a participant in the [Regional Greenhouse Gas Initiative \(RGGI\)](#) and [Virginia is the first of 13 states to opt out of California's vehicle emissions ban on gas-powered vehicles](#). State lawmakers added 2 major provisions to RGGI:

1. 50 percent of the money needed to be spent on energy efficiency programs for low-income communities and
2. Another 45 percent had to go toward helping communities adversely affected by sea-level rise and flooding.

The decision to withdraw from RGGI will result in a loss of funding (i.e., [the county has received over \\$827 million from 2020 to 2023](#)). Under RGGI power plant emissions dropped almost 17 percent. The California vehicle emissions ban called for 22% of the new vehicles sold in 2025 to be electric. The percentage would increase to 35% in 2026 and 100% by 2025. Exiting these programs, in combination with the move to use more fossil fuels for Virginia power plants will all increase the GHG emissions for the state.

In addition, The [Virginia Clean Cars Act of 2021](#) calls for increasing levels of electric and advanced low-emission vehicles, which will be critical to reducing transportation emissions. [Virginia is the first of 13 states to opt out of California's vehicle emissions ban on gas-powered vehicles](#). This action will slow adoption of EVs and highly fuel-efficient vehicles in Fairfax and the rest of Virginia.

#### Growing Impacts of Climate Change

Climate related impacts for Fairfax County in the near term are prolonged and intense heat, heavy rainfall and shorelines flooding, drought and insect-borne diseases, summarized in the resilience section of the county [Climate Action Dashboard](#). The Climate Action Dashboard describes many impacts from increases in temperature, such as rising sea level. The website also includes plans for work to both stop the causes of climate change and undertake actions to provide resilience. The Communitywide Energy and Climate Action Plan (CECAP) and Resilient Fairfax show plans and progress in the county's actions to both address the causes of climate changes and increase our resilience to climate disasters. The Climate Action dashboard also shows [interim goals that are needed to meet the 2050 carbon neutrality goals](#) and progress

towards meeting these goals. Given that the reduction of GHG emissions takes time and resources, efforts to make Fairfax County resilient to climate change impacts are also necessary. The Dashboard shows progress towards strengthening the county's capacity to adapt.

#### Climate Resilience and the Community-Wide Energy and Climate Action Plan

The [County Climate Action Dashboard](#) is a valuable resource for information on efforts to reduce GHG emissions and develop resilience. The Climate Dashboard provides key climate metrics that are much easier to understand than in previous versions of the dashboard. The updated dashboard makes significant progress in fulfilling recommendation 6CE2022.2 (i.e., Adopt a Climate Plan for public consumption that shows how CECAP, Resilient Fairfax and other climate related efforts, such as VCEA, are being implemented and the progress being made towards achieving goals). However, it does not address the key CECAP and [Virginia Clean Economy Act goal](#), namely, progress in cutting GHG emissions countywide against the reductions necessary to achieve carbon neutrality by 2045.

Climate change is expected to have many impacts on private, commercial, and industrial activities, as well as on governmental entities. There are already areas in Fairfax that are at high risk of flooding drowning due to climate-induced heavy rainstorms and increased tidal flooding. Residents of the county's eight manufactured housing parks are at extreme risk of heat related illnesses during periods of prolonged extreme heat, as was experienced in summer 2024. The [Resilient Fairfax Plan](#) provides strategies to adapt to the effects of climate change to ensure the community is prepared, while reducing the risks to climate-related hazards. Implementation of the plans began once they were adopted by the Board of Supervisors in October 2022.

CECAP sets a goal for the county to reach carbon neutrality by 2050. and cut GHG emissions by 50% by 2030. According to the most recent GHG inventory by the Metropolitan Washington Council of Governments (MWCOC), Fairfax County community-wide GHG emissions decreased by 30% between 2005 and 2020, despite a 12% growth in [population](#). Countywide GHG emissions primarily come from transportation (44%), residential and commercial buildings (49%), air conditioning and refrigerant escaped gases (5%), and waste (2%).

Cutting GHG emissions from transportation can be achieved by increasing the percentage of electric vehicles on the roads, significantly increasing gas-powered vehicles average miles per gallon (MPG), increasing use of mass transportation, biking and walking, and cutting the number of vehicles and trips made.

An [EPA calculator that incorporates the mix of energy sources used to generate electricity](#) finds that a gas-powered vehicle must get at least 70 miles per gallon to have a lower carbon footprint than an electric vehicle. This EPA estimate is based on a mix of energy sources from 2021.

Building energy use which accounts for 49% of countywide GHG emissions can be drastically cut if public utilities (Dominion Energy, NOVEC and others) meet the requirement of the [Virginia Clean Economy Act](#) to produce only carbon-free energy by 2045. It will be necessary to reduce or eliminate buildings’ use of natural gas (methane) and other GHG fuels for heating, cooling and other uses. Constructing and renovating buildings to be much more energy efficient will lower overall energy demand. Accordingly, EQAC supports adoption of “green” building code provisions that increase building energy efficiency and conservation.

To encourage businesses and residents generate carbon-free power on their own properties, the county established [Going Solar in Fairfax County](#). In addition, there is also a program available to county residents through Capital Area [Solar Switch](#). Participants in these programs can receive a free virtual assessment to determine if their home or business is well-suited for solar energy, gain access to qualified solar installers and financing, get lower costs for purchasing solar and battery storage, and purchase and install EV charging stations along with their solar purchase.

Encouraging residents and businesses in Fairfax County to install solar and other alternative energy sources is a priority, which is included in CECAP. Rural counties are increasingly resistant to approving large solar installations, due to [concerns over the loss of prime agricultural and forested land](#). Siting solar panels on buildings, parking lot roofs, parking lots, and other appropriate locations in urban and suburban areas is therefore increasingly important. We appreciate the installation of solar canopies above parking lots, such as Metro is doing in several locations. Siting solar farms on brownfields and abandoned mines, which are already environmentally impaired, is generally well suited to this purpose.

The county’s [Operational Energy Strategy](#) addresses Fairfax County government. County operations and Fairfax County Public School’s (FCPS) direct operations constitute only about 5 percent of the county’s total GHG emissions. The county’s efforts will likely serve as a model for others as the [county installs renewable energy, deploys electric vehicles and chargers, and prioritizes energy efficiency in new construction and major renovations](#). EQAC is disappointed that [Dominion Energy is now imposing 100 percent of the costs of grid interconnection equipment needed for mid-sized solar installations on individual solar installers. This action is undercutting the economic viability of solar panels on several Fairfax County projects, such as on the roofs of schools.](#)

**CURRENT STATUS AND CONCERNS**

There are several county actions that address climate change addressed in other chapters. A list of these recommended actions is included below in Table 6- 2 along with the status in terms of adoption.

Chapter	Recommendation	Status
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**Commented [LZ1]:** Can we get from OEEC number of solar contracts? I saw a press release recently that showed it was small – from today’s NVRC email newsletter:

**Solarize NoVA Update**

As of July 15 the Solarize NoVA campaign has resulted in 60 solar arrays for 576.2 kW and \$1,780,063 in contract value. Contracts for Towns are part of the total for their sister county. With 250 outstanding projects to be evaluated these numbers will be updated in September.

**Commented [LZ2]:** Will be updated with information from chapter authors

Transportation	2TRANS-2023.1. Develop a formal plan to increase light-duty electric vehicle (EV) registrations to at least 15% of total registrations by 2030.	Making Progress
Transportation	2TRANS-2023.2. Provide the resources and funding needed to complete and implement the Active Fairfax Transportation Plan in a timely manner, including the Safe Streets for All Program.	?
Land Use	Update the State of the Plan and Concept for Future Development Map.	Making Progress
Land Use	Improve processes to minimize ecological degradation from development.	Making Progress
Land Use	Encourage private sector green building standards.	Making Progress
Land Use	Conduct outreach to RPA and Tidal Wetlands Property Owners to convey the responsibility to protect these resources and obtain permits for modifications where required.	?

**Table 6-2. Climate Related Recommendations from other Chapters and their Status in Terms of Adoption**

Planning and Implementation

The county adopted both the CECAP Implementation Plan and Resilient Fairfax in October of 2022. Although the overall plans are in place, additional detailed operational plans will be needed. Progress is being made. For example, as of the summer of 2024, the County Executive outlined a number of actions to address flooding for the Board of Supervisors. This work is expensive but needed.

In February 2023, the county posted the [Climate Action Dashboard](#). While the Climate Action Dashboard is a work in progress, it includes information on both CECAP and Resilient Fairfax. Priority programs like CECAP and Resilient Fairfax should provide specific information to the public so that their progress is clear. EQAC believes that the county should include the assignment of responsibility, a budget (which might be expended over multiple years), performance metrics with time frames, and deliverables. Without these basic project management components, it is difficult to assess the extent to which a project is a sound expenditure of tax dollars. EQAC recommends that such information would be helpful for the public to see progress on county expenditures, especially for priority county projects like CECAP and Resilient Fairfax. EQAC has often said to county staff that it is not sufficient to do good work, it is important that the progress and completion and benefits of the county’s work be shared with residents and businesses.

While new county buildings may all achieve LEED Gold, county operations reflect only a small part of the county’s overall emissions. Demonstrating that county buildings can be affordably built to LEED Gold and that solar installations on county buildings can cut energy-related GHG emissions can serve as models for businesses and residents. But

what is essential is progress that is made in the commercial and residential sectors of the county. The Dashboard does not show measures of commercial and residential building energy performance or renewable energy installation.

The Climate Action Dashboard also describes how Resilient Fairfax is placing an emphasis on equity (see the Climate Action Dashboard for details). Lower income populations are more likely to lack the resources to provide air conditioning to prevent heat-related illnesses when temperatures rise and remain excessive. Moreover, areas lacking trees are likely to be heat islands where temperatures can be 10 or even 20 degrees hotter than areas with more trees. Analyses by OEEC of tree canopy found that most (72%) of census tracts in the county have [40% of more tree coverage](#). Of the remaining 71 census tracts (28%), there are [24 census tracts that have low tree canopies and highly vulnerable populations](#). These areas that are lacking trees present an opportunity for planting trees and reducing heat island impacts on residents.

EQAC applauds the efforts of Resilient Fairfax to help neighborhoods at risk of flooding, extreme heat, and other climate related risks. Resilient Fairfax has made progress in providing the public with important information on the county website, in the periodic webinars that they host, and through periodic email message to inform interested parties.

#### Budget

In 2022, the Board directed county staff to work with EQAC to concentrate on a limited number of highest priority recommendations that would have the greatest environmental impacts.

The top priority, in support of *Recommendation 6CE2022.1*, EQAC recommends that the county develop a climate budget each year in the county's annual operations budget and 5-year Capital Improvement Plan (CIP) budget that provides adequate funding for all components of CECAP and Resilient Fairfax. Although the annual operations budget includes some funding for CECAP and Resilient Fairfax, too many climate-related activities are still funded through one-time, end-of-year allocations or not funded at all. Reliance on year-end funding makes planning and programming uncertain, delaying effective climate-related priorities. Annual and multi-year CIP budgets generally lack sufficient detail about what CECAP and Resilient Fairfax strategies are being funded. Even though the Climate Action Dashboard provides some information on progress, the CECAP implementation plan, Resilient Fairfax and the county budget documents all lack necessary detail about the amounts of funding needed and the amounts provided to meet the county's ambitious climate objectives. Explicit and detailed information about funding needed to accomplish each strategy should be provided to the Board and made accessible on the Climate Action Dashboard. EQAC agrees with Board of Supervisors comments that the activities that are needed to achieve county and state climate goals should be explicitly identified along with their funding needs.

### Community Engagement and Communications

Communications between the county and residents, businesses and other stakeholders can take two paths. First, outreach is important to disseminate information to the community. However, this one-way communication is often inadequate to help communities understand how decisions and policies will affect their lives, and how they can participate in making changes. Second, community engagement requires more work from county staff to meet, talk and share ideas and plans with community members. Community engagement includes a meaningful dialogue with an exchange of ideas to build a common understanding and create climate champions. Attitudes and behaviors change through meaningful and sustained engagement. EQAC strongly supports community engagement. In the absence of a rich dialogue that provides an exchange of ideas, CECAP and Resilient Fairfax initiatives will be less likely to have the support of county residents and businesses. Generally, the county is making progress on EQAC Recommendation 6CE-2021.3, "Implement major Community Engagement and Educational campaign on the Actions that Businesses and Residents can do to reduce GHG Emissions."

Less progress has been made in engaging Fairfax's business community. Their active involvement is crucial in achieving community-wide GHG reductions. Some county businesses already employ strategies to cut their energy use, have deployed renewable energy and strengthened their resiliency to environmental stress. Fairfax County should seek out these business leaders to share their successes and inspire others. The county must engage business leaders in the county that have notable successes in their companies. These business leaders can inspire other businesses to adopt practices that reduce their companies' GHG emissions and identify barriers that the county can help to resolve. EQAC assesses that Recommendation 6CE-2021 has stalled. The county has made progress engaging some in the business community through the Green Business Partners program, but so far the program has primarily consisted of the county providing information, not supporting an active forum where businesses share green practices and create momentum in the business community.

### Supporting the Development of Electric Vehicles (EVs)

The county has taken steps to promote EVs. Their efforts [include](#):

1. Assisting several Community Residential Associations in installing EV charging stations.
2. Waiving permitting fees for the installation of residential charging stations.

The county's work to plan and implement an EV charging network for residents of buildings without EV charging and travelers shows progress. Thus, recommendation 6CE-2023.5 continues to make progress.

Progress is being made to electrify county and FCPS bus systems. Fairfax County received \$50.5 Million Federal grant for new low emission buses and supporting EV



infrastructure. FCPS received a [grant](#) for \$16.59 million in the Environmental Protection Agency's Clean School Bus program. This award will enable the county to purchase 52 electric buses. Thanks to this award, Fairfax County Public Schools officials have indicated that they expect to have 73 electric school buses in operation by the 2025-2026 school year. FCPS has a fleet of about 1,600 buses, Fairfax Connector operates around 360.

### Data Centers

[Northern Virginia has the highest concentration of the world's data centers](#). Data centers are appreciated for the significant local taxes that they can bring to a community. While data centers are known for their significant electrical consumption (Virginia's energy consumption [is expected to increase by 85% over the next 15 years](#) largely due to data centers) and [significant water use](#), data centers increase computational efficiency and reliability. Moreover, the major corporations that use data centers have made [strong environmental commitments](#) to be carbon neutral and minimize water consumption.

In 2023 the Virginia Department of Environmental Quality proposed a [variance](#) that would allow emergency generators to operate during times when a "maximum Generation Emergency/Load Management Alert" was posted. The proposal would have suspended [short-term emission limits](#). The emergency would also suspend county noise ordinance compliance requirements. While the initial proposal included Fairfax, Loudon, and Prince William counties, the proposal was scaled back to only Loudon. An issue that prompted the request for the variance was a concern for the electric transmission capability of the region, which is a national problem because the aging electrical grid is in need of updating. Recognizing the need to address the aging electrical grid the Federal Energy Regulatory Commission (FERC) issued [Order no. 1920](#), which provides requirements for electrical infrastructure planning.

As indicated above, the substantial energy demands of data centers could result in brownouts or blackouts in high demand summer days. While Dominion Energy's will need to bring on some fossil fuel power plants to meet demand, mostly natural gas, Department of Environmental Quality staff state that [Virginia is on target to meet its VCEA requirement to reduce its carbon emissions to zero by 2045](#). Several of the major corporations that are major users of data centers have adopted environmentally oriented goals, such as Amazon's ["Driving Climate Solutions."](#) Given that the major corporations that use data centers have strong environmental commitments, it would seem that they would want the public to see the efforts that they make to reduce GHG emissions and water use so the county could this information and publicly share it and also seek this information as a part of the zoning special exception process. Given that as of the time that this chapter has been drafted there has been no action on recommendation 6CE2023.1, this recommendation is stalled.

## **RECOMMENDATIONS**

The Scorecard for this IS contains the following recommendations pertaining to this chapter. Please see the Scorecard for details.

- 1. Incorporate adequate funding for both CECAP Implementation and Resilient Fairfax in the annual operations and CIP Budget.**  
*Recommendation: 6CE-2022.1 | Age: 3 years | Status: Making Progress*
- 2. Adopt a Climate Plan for public consumption that shows how CECAP, Resilient Fairfax and other climate related efforts, such as VCEA, are being implemented and the progress being made towards achieving goals.**  
*Recommendation: 6CE2022.2 | Age: 3 years | Status: Making progress*
- 3. Seek the ongoing advice of business leaders on climate and energy issues.**  
*Recommendation 6CE-2021.4 | Age: 4 | Status: Stalled*
- 4. Plan and implement an EV charging network so that residents of buildings without EV charging and travelers will have options for charging their EVs**  
*Recommendation: 6CE-2021.5 | Age: 4 years | Status: Making progress*
- 5. Collect energy consumption information on current and planned data centers in the county and determine the extent to which data centers obtain green energy in order meet the county's carbon neutrality targets.**  
*Recommendation: 6CE2023.1 | Age: 1 year. Status ?? t*
- 6. Implement major Community Engagement and Educational campaign on the actions that businesses and residents can do to reduce GHG emissions.**  
*Recommendation: 6CE-2021.3 | Age: 4 years | Status: Making progress*