

4 Environment and Sustainability

This Chapter is supported by two Guiding Principles: Natural Environment and Sustainability Initiatives. The Natural Environment Guiding Principle focuses on the physical and geographic context of the City and the impact on local and regional environmental resources. The City has several types of environmental resources that are easily impaired by urban land uses. Encompassing the headwaters of Accotink Creek, measures taken by the City to protect water quality, riparian and floodplain areas, open space, and the urban forest are critical to support regional efforts to improve environmental health. Located within the Chesapeake Bay Watershed, the City is committed to reducing stormwater runoff in order to protect the Bay through the adoption of the Chesapeake Bay Preservation Act (Appendix A) and enforcement of other federal, state, and local stormwater regulations.

The Sustainability Initiatives Guiding Principle focuses on City practices with a more global interest. This includes specific actions that support sustainable practices that can decrease greenhouse gas emissions from both building energy use and transportation; increase energy efficiency; increase utilization of renewable energy; increase waste reduction and recycling; conserve water; and support healthy lifestyles. It is important to recognize that sustainability practices address a broad range of social, economic, and environmental issues, and therefore are incorporated throughout the Comprehensive Plan.

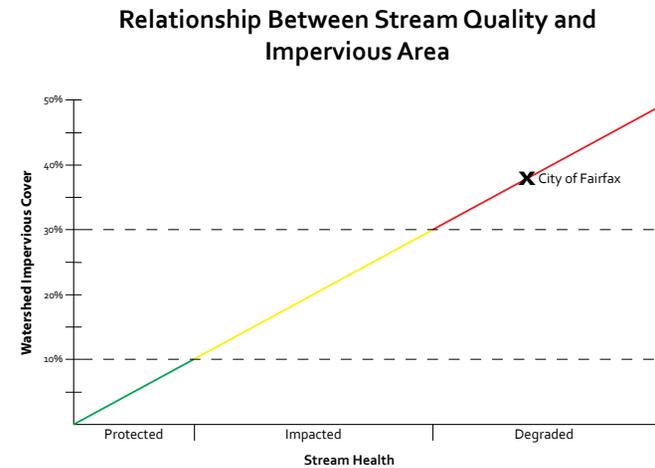


Opportunities and Challenges

Impervious surface

Previous land development has resulted in a large percentage of impervious areas, as shown in Figure 31. Impervious areas have structures such as pavement and buildings that do not allow rainwater to pass through into the ground, and increase the speed and amount of stormwater runoff resulting in negative impacts to streams. As shown in the chart “Relationship Between Stream Quality and Impervious Area,” as the percentage of impervious cover in a watershed increases, stream quality declines. At 42.7% impervious cover, the City’s streams are classified as “non-supporting streams.” Streams in this category are usually so degraded they become a conduit for conveying stormwater and have poor stream quality. As is typical in urban areas, maintaining the health of streams in the City is a continual challenge. The City has an opportunity to increase the amount of pervious areas with redevelopment and to improve the stormwater management system in order to adequately manage stormwater runoff.

FIGURE 31 PERVIOUS AND IMPERVIOUS AREAS

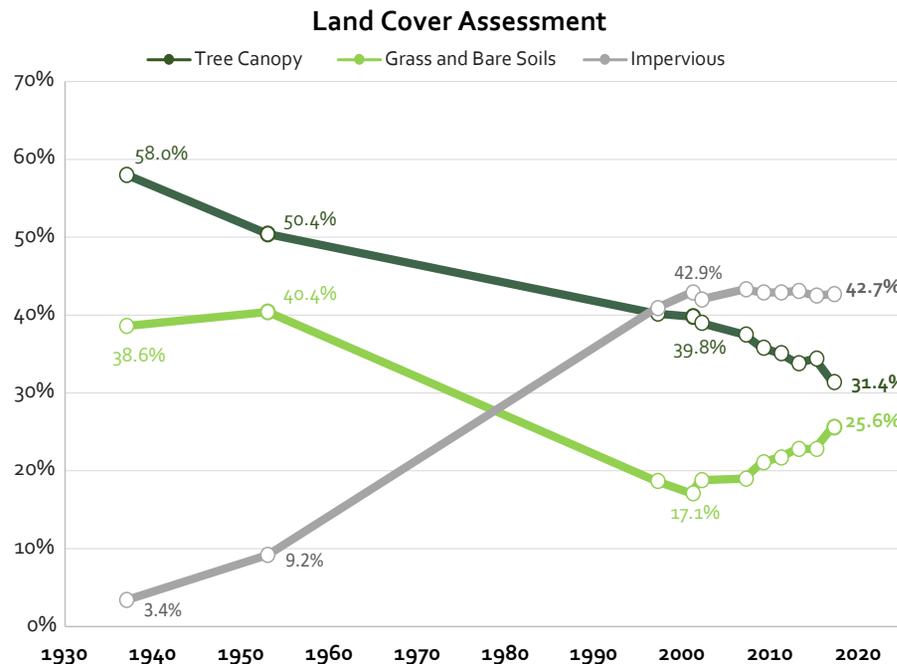


As impervious ground cover increases, stream health and quality declines. With 42.7% of its ground area covered by impervious surfaces, the City’s streams are considered degraded with poor quality.

Tree cover

Due to urbanization, much of which occurred during rapid post World War II development around Washington, D.C., the City's tree canopy decreased from 58% in 1937 to 31.4% in 2017, while impervious areas have increased from 3.4% to 42.7% as shown in Figure 32. Tree canopy coverage offers many benefits, such as conserving energy due to the reduction of temperatures from shading, improving air quality, reducing stormwater run-off, improving property values, and beautifying our community. Because the City is almost entirely developed, few significant forested areas remain. Those that still exist, whether public or private, deserve specific attention so that their aesthetic and ecological benefits to the City are not lost.

FIGURE 32 TREE CANOPY



Source: City of Fairfax conducted a tree canopy assessment using the i-Tree Canopy software developed by the US Forest Service. The i-Tree land cover assessment results were estimated using random sampling statistics and have standard deviations ranging from $\pm .14$ to ± 1.53 .

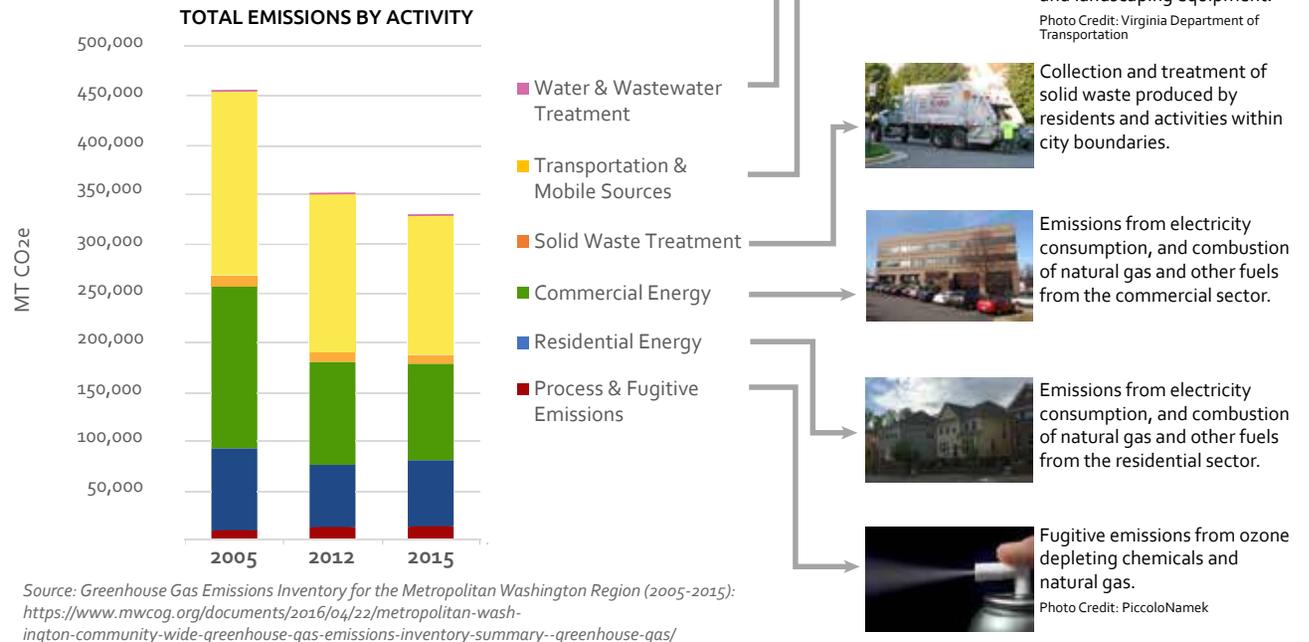
Source: Individual municipal websites



Greenhouse gas emissions

Scientific consensus accepts the reality of climate change and recognizes that human activity, especially the combustion of fossil fuels that creates greenhouse gases, is an important driver of climate change. The City, along with the entire Mid-Atlantic region, can anticipate changes in temperature, precipitation, water supply, and air quality as a result of the changing climate. Local governments are responding to new demands on infrastructure as well as impacts to natural resources related to weather instability and changing, uncertain climatic conditions. The City is committed to exploring the potential benefits and costs of adopting policies and participating in programs that promote the long-term goal of greenhouse gas emissions reduction while maximizing economic and social benefits. A summary of greenhouse gas emissions from community activities in the City is provided in Figure 33. The City will explore and prioritize strategies that could best aid in reducing greenhouse gas emissions.

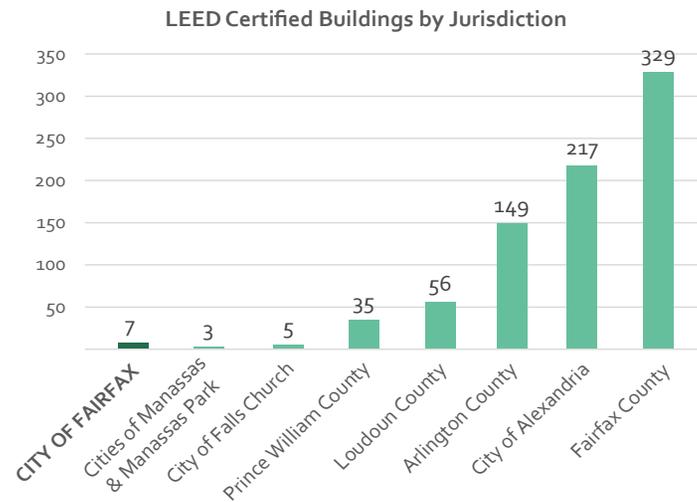
FIGURE 33 GREENHOUSE GAS EMISSIONS



Green building practices

With new public and private development projects, the City has ample opportunity to encourage the use of green building practices (Figure 34). In addition to the environmental benefits of green buildings (e.g., reducing energy use, greenhouse gas emissions, construction waste, etc.), they can also enhance the economics of local development. Recent trends show that office space meeting green building standards generally experiences higher demand and can be a catalyst for bringing new businesses to a community.

FIGURE 34 GREEN BUILDINGS



Fairfax Marketplace



Fair City Mall



Residence Inn



PNC Bank Branch

PROJECT NAME	LOCATION	LEED SYSTEM	POINTS ACHIEVED	CERTIFICATION LEVEL	CERTIFICATION DATE
Fairfax County Health Dept Laboratory	10310 Layton Hall Dr	LEED-NC 2.2	41	Gold	6/8/2011
Barcelo Crestline	3950 University Drive	LEED-CI 2.0	23	Certified	11/5/2010
PNC Bank Branch- Main St & Judicial Ave	10649 Main Street	LEED-NC 2.2	27	Certified	6/28/2013
Fair City Mall	9652 Main St	LEED for Retail (New Construction) Pilot	22	Certified	1/31/2011
Residence Inn	3565 Chain Bridge Road	LEED-NC v2009	42	Certified	6/12/2012
Fairfax Marketplace	10944 Fairfax Boulevard	LEED-EB:OM v2009	40	Certified	4/30/2015
TD Bank - Fairfax Turnpike Shopping Center	Pickett Road and Main Street	LEED-NC Retail v2009	72	Gold	7/25/2012

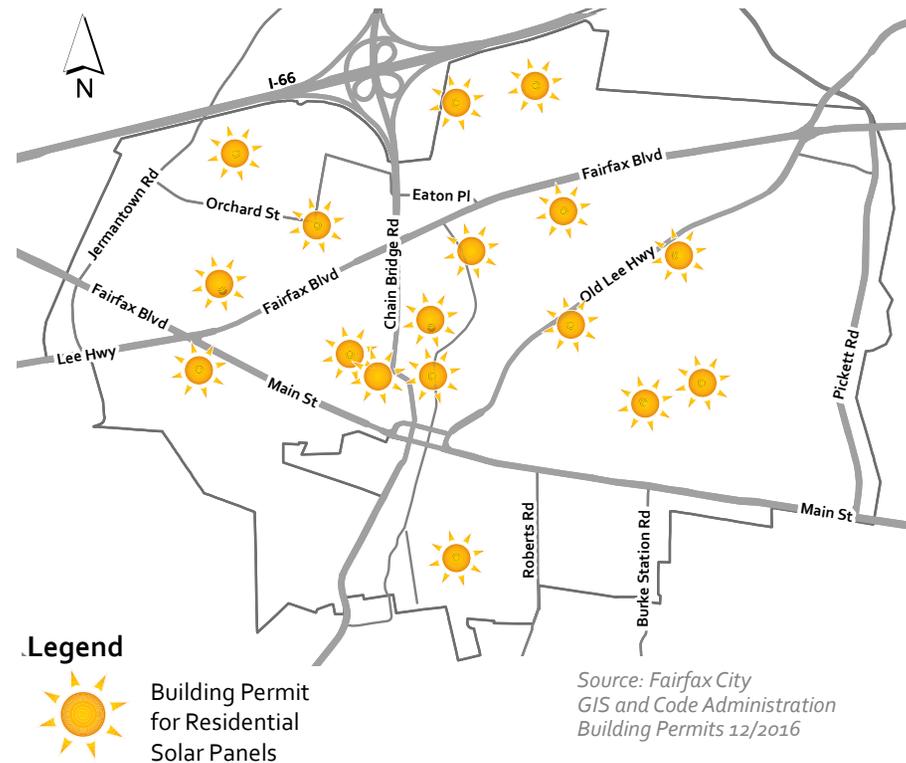
Data Source: The Green Building Information Gateway (GBIG) (<http://www.gbig.org/>). Data was provided to the City of Fairfax on 10/6/16.

*Data excludes confidential projects and LEED Neighborhood Development (ND) certifications

Solar installations

In recent years, the City has seen an increase in the number of solar energy installations (Figure 35). Increasing the use of renewable energy sources will benefit the resilience and economic competitiveness of our community. Since 2014, the City has participated in the Solarize NOVA campaign, a yearly effort to encourage incorporation of solar power into individual homes and businesses in Fairfax and several peer jurisdictions. This is accomplished through incentives such as free solar assessments. In 2017, the City received a “Bronze” designation from the national program SolSmart for encouraging solar energy growth and removing obstacles to solar development.

FIGURE 35 BUILDING PERMITS FOR RESIDENTIAL SOLAR PANELS

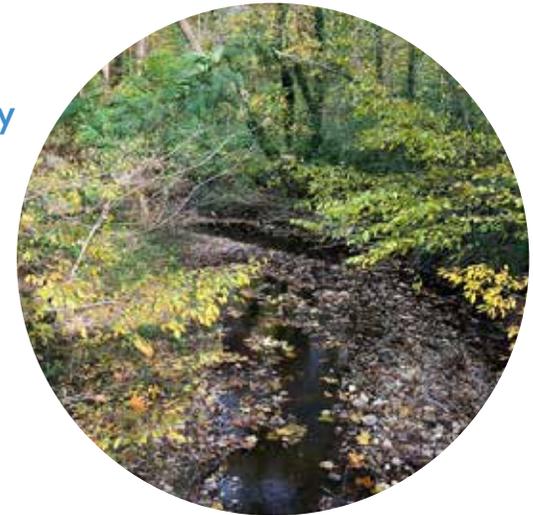


Natural Environment

One of the characteristics of the City that makes it a desirable and healthy place in which to live is the extent, diversity, and quality of its environmental resources. The City's main environmental resources include wetlands, ponds, streams, public parks, open space, and urban forests. As the City continues to grow and redevelop, these resources are at risk of being impaired. Growth and development often cause pollution to the water, air, and soil; degradation to ecosystems; and loss of natural areas that contribute to residents' quality of life. Continuing to preserve and restore our environmental resources ensures a healthy environment by providing access to clean air, clean water, healthy ecosystems, and high quality recreation areas. The City is also at risk from impacts caused by natural and man-made hazards. Reducing threats to the community and environment from these hazards will foster a safer and healthier community.

Guiding Principle:

In 2035, Fairfax is a city with... a healthy ecosystem of naturally flowing streams, native plants, wildlife, contiguous natural habitat areas, and a healthy tree population.



Natural Environment Goal 1

Preserve, promote, and enhance a healthy environment.

The local environment will be preserved and protected through insightful policies and programs that improve the quality of the City's natural resources. Managing the stormwater that runs off land surfaces is a fundamental practice to mitigate the adverse effects of urban development by reducing flow velocities and enhancing water quality. Several federal, state, and local regulations and the City's adoption of the Chesapeake Bay Preservation Ordinance are enacted to protect the region's water resources.

The City has the opportunity to protect and increase the tree canopy by identifying the greatest challenges facing the urban forest (e.g. development, disease, etc.) and developing and implementing an urban forest management plan that includes detailed strategies for attaining a diverse, well-managed urban forest.

OUTCOME NE1.1: Clean and protected water resources and watersheds in the City.

ACTION NE1.1.1 Reaffirm and implement the City's Chesapeake Bay Preservation Plan (Appendix A) and zoning regulations.

ACTION NE1.1.2 Enhance zoning regulations and support initiatives that encourage the use of green stormwater infrastructure on private and public property.

ACTION NE1.1.3 Retain and acquire riparian areas as open space or parkland.

OUTCOME NE1.2: Clean, healthy air that supports plant, animal, aquatic, and human life.

ACTION NE1.2.1 Develop and implement a Climate and Energy Action Plan to achieve regional greenhouse gas emissions reduction goals (20% reduction from 2005 level by 2020, 80% reduction from 2005 level by 2050) as committed to in the Greater Washington 2050 Compact.

ACTION NE1.2.2 Identify and implement strategies to reduce airborne pollutants known to cause health problems.

OUTCOME NE1.3: A diverse, well-managed urban forest dominated by native species.

ACTION NE1.3.1 Develop and implement an urban forest management plan to protect the City's urban forest and increase the quantity, density, and diversity of trees on public and private land.

ACTION NE1.3.2 Support incentives, provide education, and partner with public and private groups to encourage native tree planting and preservation by private property owners.

Natural Environment Goal 1



ACTION NE1.3.3 Update zoning regulations and public facilities manual for tree preservation, removal, and planting of preferred species of trees located along streets, parking lots, and riparian areas.

OUTCOME NE1.4: A diverse population of native vegetation protected from invasive plants.

ACTION NE1.4.1 Develop a strategy to control invasive species including identifying and mapping areas impacted by invasive plants.

ACTION NE1.4.2 Support the development of community and habitat gardens on underutilized parcels and public lands.

ACTION NE1.4.3 Provide education and partner with public and private groups to promote the preservation and planting of native plants, sustainable landscaping techniques, and management of invasive plants.

OUTCOME NE1.5: Restored and preserved natural open spaces and contiguous greenway corridors that provide natural habitats for plants and wildlife.

ACTION NE1.5.1 Restore disturbed areas along streams and in conservation easements with native species.

ACTION NE1.5.2 Pursue opportunities to purchase and preserve in perpetuity privately-owned open space.

ACTION NE1.5.3 Encourage new development that protects and preserves environmentally-sensitive areas and natural features, such as tree cover (especially significant stands of trees and healthy, mature trees), native vegetation, streams, wildlife habitat, and natural topography.

Natural Environment Goal 2

Prepare for the impacts from natural and man-made hazards.

Extreme weather events such as prolonged heat, hurricanes, and flash flooding have contributed to negative health impacts, damaged homes and businesses, destroyed critical infrastructure, and to interruptions in the region's economic activity. These types of weather events are projected to increase in frequency and magnitude. There is also a risk that the community could be exposed to a variety of pollutants and hazardous chemicals, which may have negative effects on human health and the environment. The City should take steps to prepare for and mitigate these hazards.

OUTCOME NE2.1: Reduced risk and improved preparedness to meet the challenges associated with natural and man-made hazards.

ACTION NE2.1.1 Participate in the National Flood Insurance Program's (NFIP) Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.

ACTION NE2.1.2 Develop a resiliency plan to set priorities and allocate resources to manage risks associated with natural and man-made hazards.

ACTION NE2.1.3 Continue to work with the Northern Virginia Hazard Mitigation Advisory Committee to regularly update the Northern Virginia Hazard Mitigation Plan.

OUTCOME NE2.2: Reduced exposure to pollutants and hazardous chemicals in the environment.

ACTION NE2.2.1 Enhance exterior lighting standards and pursue certification as an International Dark Sky Community to reduce light pollution and protect nighttime skies.

ACTION NE2.2.2 Continue to enforce noise standards.

ACTION NE2.2.3 Promote the proper disposal or recycling of household hazardous waste.

ACTION NE2.2.4 Educate on the identification, risks, and remediation of hazardous materials in buildings, including but not limited to radon, asbestos and volatile organic compounds.

ACTION NE2.2.5 Develop integrated pest management and nutrient management plans.

ACTION NE2.2.6 Promote the responsible use of pesticides and fertilizers.

Sustainability Initiatives

Sustainability can be defined in many ways. In relation to urban planning, sustainability is often defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987). The City has a responsibility to future generations to develop sustainably. In 2013, the City executed an energy performance contract to implement energy retrofits at fourteen City-owned buildings. The City pays back the upfront costs of the retrofits using the annual energy cost savings over time.

Sustainability issues extend well beyond City boundaries, so local decisions can impact the region and beyond. The City collaborates with regional partners, such as MWCOG and the Northern Virginia Regional Commission (NVRC) in formulating solutions to sustainability challenges and taking actions to achieve regional goals. In 2010, the Mayor and City Council adopted a resolution endorsing the voluntary Greater Washington 2050 Compact in which the City committed to following the principles and goals set within The Region Forward report, a vision for a more accessible, sustainable, prosperous, and livable metropolitan Washington.

Guiding Principle:

In 2035, Fairfax is a city with... sustainable practices that preserve, conserve, reuse and recycle resources.



Sustainability Initiatives Goal 1

Increase the use of sustainable practices, technology, design, and materials.

This City should seize the opportunity to promote energy efficient and sustainable redevelopments and retrofits of aging buildings while also encouraging designs that fit within the context of the existing community. This can involve incentives for privately-owned buildings as well as City investment in public facilities. Education about financing options (such as the Fairfax Renaissance Housing Corporation loans) should be provided to property owners. By improving energy efficiency and sustainable design of civic operations and in the greater community, the City will harmonize resources, investments and technology, help reduce utility costs, support “green collar” jobs, and institutionalize change.

OUTCOME SI1.1: Minimized energy demand with the application of energy efficient design features, technologies, and best practices.

ACTION SI1.1.1 Promote the efficient use of energy by residents, business owners and government facilities and operations to achieve a 30% reduction in energy use from 2018 baseline levels by 2035; a 40% reduction from 2018 baseline levels by 2040; and a 55% reduction from 2018 baseline levels by 2050.

SI1.1.1.1 Use a data-driven assessment process to deploy energy efficiency technologies throughout all government facilities and operations, and promote energy efficiency best practices among government employees.

SI1.1.1.2 Support incentives, provide education, and partner with public and private groups to promote energy efficiency and sustainability improvements by private property owners.

SI1.1.1.3 Promote voluntary benchmarking for commercial buildings.

SI1.1.1.4 Implement programs that offer clean energy financing solutions for residential and commercial sectors, such as the Solarize NOVA campaign, Property Assessed Clean Energy (PACE) program, and Fairfax Renaissance Housing Corporation (FRHC) Loans.

ACTION SI1.1.2 Develop a green building policy that establishes green building standards and incentives for both private and public sector construction and major renovations.

OUTCOME SI1.2: Increased use of renewable energy sources and advanced sustainable technologies.

ACTION SI1.2.1 Conduct feasibility studies and subsequent plans for government operations to achieve 100% renewable electricity by 2035 and community-wide 100% renewable electricity by 2050.

ACTION SI1.2.2 Revise applicable codes, zoning regulations, policies, and design guidelines to help facilitate local renewable energy deployment and adoption of sustainable technologies.

ACTION SI1.2.3 Provide education and incentives for residents and businesses to install renewable energy systems and sustainable technologies.

ACTION SI1.2.4 Partner with other local governments, organizations, and individuals on renewable energy planning and implementation.

Sustainability Initiatives Goal 1

OUTCOME SI1.3: Reduced waste and increased reuse and recycling of materials.

ACTION SI1.3.1 Implement the Solid Waste Management Plan, which establishes waste reduction goals and outlines how the City manages solid waste and recycling.

OUTCOME SI1.4: Minimized potable water demand in the community.

ACTION SI1.4.1 Develop and provide water conservation education and incentive programs for residents and businesses to promote the use of water efficient practices and products.

ACTION SI1.4.2 Support incentives and revise applicable codes, policies, and design guidelines to encourage water efficiency in new construction and landscaping.



Sustainability Initiatives Goal 2

Support physical activity and healthy lifestyles.

Since the City is mostly built out and infrastructure is already in place, it is an ideal location to provide access to healthy food, community facilities, and recreational opportunities. Smart growth concepts should be incorporated in new development and redevelopment to further enhance the ability of residents to take advantage of public transportation, parks, open space, and trails. The City also strives to improve access to healthy, affordable, and regionally-grown foods to promote public health, reduce environmental impacts, and support economic development (Figure 36).

OUTCOME SI2.1: Access to healthy, regionally-grown foods.

ACTION SI2.1.1 Evaluate regulations that permit urban agriculture on publicly-owned property and/or space for community gardens in new multifamily and mixed-use developments.

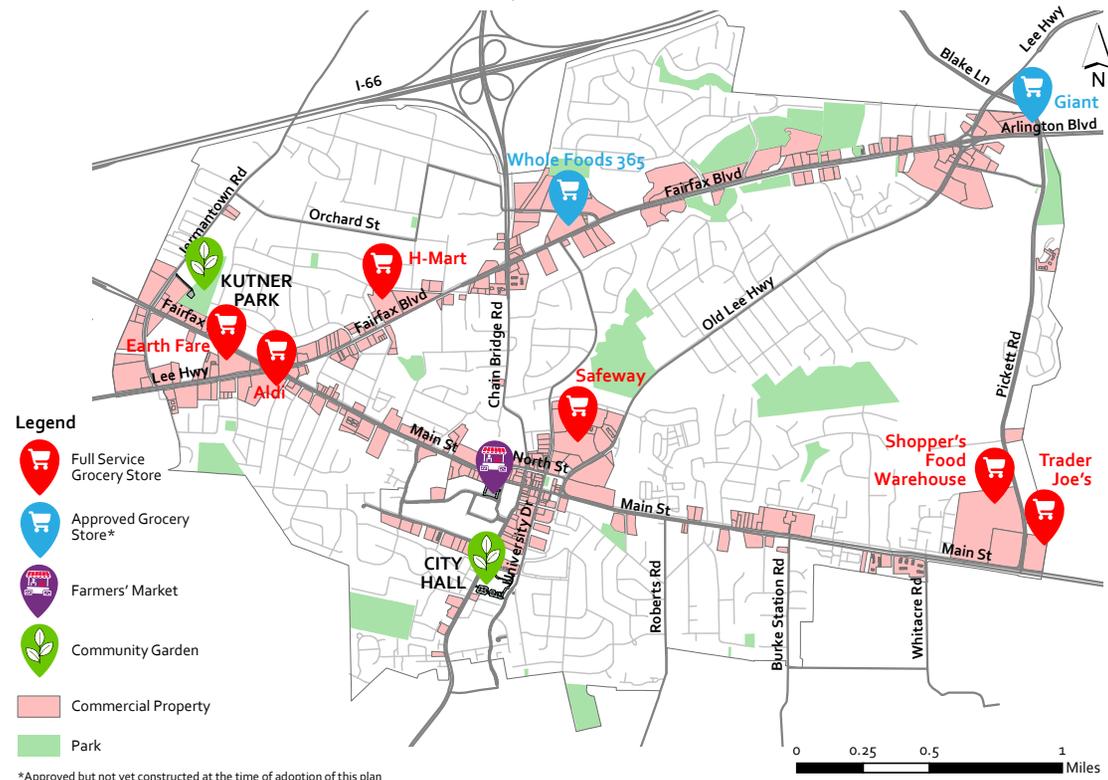
ACTION SI2.1.2 Work with Fairfax County to develop a healthy food access plan.

OUTCOME SI2.2: Access to parks, recreation, community facilities, trails, and open space.

ACTION SI2.2.1 Promote walking and trail use as part of a healthy community initiative.

ACTION SI2.2.2 Partner with Fairfax County and NOVA Parks to improve and expand the local and regional park system.

FIGURE 36 FULL SERVICE GROCERY STORES, FARMERS MARKETS AND COMMUNITY GARDENS



*Approved but not yet constructed at the time of adoption of this plan

Source: Fairfax City GIS Parcels 2018