

**THE CITY OF FREDERICK
MAYOR AND BOARD OF ALDERMEN
RESOLUTION NO: 16-15**

A RESOLUTION concerning

THE ADOPTION OF A SUSTAINABILITY PLAN

WHEREAS, the goal of a Sustainability Plan is to maintain balance between economic, social, and ecological needs for today and for future generations; and

WHEREAS, sustainable cities help create healthy communities, healthy residents, and healthy environment; and

WHEREAS, sustainable cities support a strong, local economy with better access to jobs, services, and amenities; and

WHEREAS, sustainable cities encourage healthier lifestyles by providing alternative transportation options and access to nutritious food choices; and

WHEREAS, sustainable cities lead the way in more efficient and renewable energy and fuels to reduce costs and the City's carbon footprint; and

WHEREAS, sustainable cities protect water quality and green spaces while encouraging smart development; and

WHEREAS, sustainable cities design communities such that all levels of income are supported with adequate services and amenities; and

WHEREAS, the Board of Aldermen has held three public workshops on October 22, 2014, April 1, 2015, and June 8, 2016 to discuss and receive public comment on a Sustainability Plan.

NOW, THEREFORE, BE IT RESOLVED THAT THE BOARD OF ALDERMEN OF THE CITY OF FREDERICK hereby adopts the "The City of Frederick Sustainability Plan", attached hereto as Exhibit A and incorporated herein.

ADOPTED AND APPROVED THIS 21st DAY OF JULY, 2016.

WITNESS

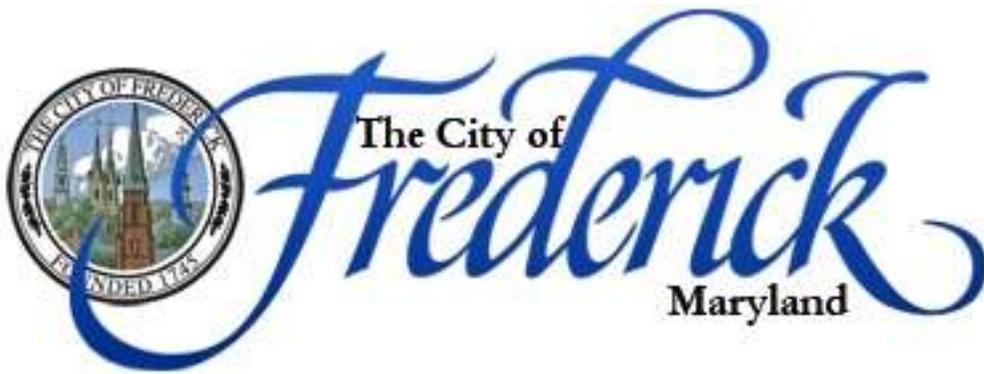
Phyllis McAtee

Randy McClement
Randy McClement, Mayor

Approved for Legal Sufficiency:

Shirley A. Nichols
City Attorney

The City of Frederick
Sustainability Plan



Date of Adoption: July 21, 2016

Mayor and Board of Aldermen

Randy A. McClement, Mayor

Alderman Kelly Russell, President Pro Tem

Alderman Michael O'Connor

Alderman Phil Dacey

Alderman Josh Bokee

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*Special thanks to University of Maryland Program for Action Learning in Sustainability PALS faculty and students for their input to this plan.

Table of Contents

Introduction	4
Transportation	7
Energy	13
Waste & Recycling	17
Impervious Surfaces & Built Environment	21
Urban Tree Canopy & Open Spaces	25
Food & Nutrition	29
Water Quality & Water Supply	32
Air Quality	36
Sustainability for the City of Frederick	39

Introduction

Frederick is committed to sustainability for everyone who lives, works, and plays in the City. With participation from businesses, residents, and government, we will create a City that is resilient at its core and periphery and will become a sustainability model for the region.

The City has worked toward sustainability for a number of years. The City's numerous designations and awards, a few of which are shown below, serve as the framework for this plan and sustainability efforts in the future.

- 2015: Recertified as Bronze-Level Bicycle-Friendly Community by the League of American Bicyclists
- 2015: Gold Leaf Award by the International Society of Arboriculture
- 2013: Sustainable Maryland Certified Municipality by the Environmental Finance Center, University of Maryland
- 2012: Maryland Green Registry
- 2011: Green Initiatives Team Ad Hoc Committee created
- 2010: 10 Great Neighborhoods by the American Planning association
- 2005: Great American Main Street Award by the National Trust
- 1993: City Livability Award by the United States Conference of Mayors
- 1980: Tree City USA, the first in Maryland
- 1952: Designated "Historic District," the 13th in the nation.

This plan is the City's framework to tackle challenges and prioritize policies and actions that will guide Frederick toward a more sustainable future. The policies and actions suggested in this plan will help the City provide access to transportation, healthy food, educational and cultural resources, green spaces, clean air and water to residents and businesses.

What is sustainability?

Sustainability means maintaining balance between economic, social, and ecological needs for today and for future generations. Each of these will be addressed within the eight sectors of this plan. Sustainable choices today will help facilitate healthy communities, healthy residents, and a healthy environment now and into the future.

What does sustainability mean for you?

A sustainable city benefits everyone by providing better transportation, buildings, neighborhoods, parks, and healthy places to work and live. The City is working toward becoming a more sustainable community by:

- Supporting a strong, local economy with better access to jobs, services, and amenities
- Encouraging healthier lifestyles by providing alternative transportation options and access to nutritious food choices

- Leading the way in more efficient and renewable energy and fuels to reduce costs and our carbon footprint
- Protecting water quality and green spaces while encouraging smart development
- Designing communities such that all levels of income are supported with adequate services and amenities

How do we make it happen?

We can achieve sustainability through a collaborative process. Each of us plays an important part in creating and maintaining a sustainable Frederick. The City government is leading this effort, and residents and private businesses also are essential to achieving these goals. By building partnerships with various committees, interest groups, local and state government, and within City departments, sustainable ideas and actions will filter through projects on every level. This plan outlines actions and policies that could help each of us to become part of the sustainability solution.

This Sustainability Plan will be evaluated every two years to assess progress on existing goals, outline new goals, and identify new opportunities for actions and policies.

Sustainability Committee

The Sustainability Committee was first the Green Initiatives Team, an ad hoc committee formed in 2011 (Resolution number 11-17) of community members interested in furthering the sustainability goals of the City. In 2016, the ad hoc committee became the Sustainability Committee (Resolution number 16-05).

With the hope that experts in various fields such as energy, water, and green building would be part of the team, the Committee has an opportunity to help the City become a sustainability leader for the region. As a permanent committee, the Committee will be able to take on more in-depth projects that will ultimately help the City meet its sustainability goals.

City and County Profile

At 667 square miles, Frederick County is Maryland's largest county by land area. The county straddles both urban and rural Maryland. It is the state's largest dairy producer, while also home to a growing high tech and bioscience hub. The population of Frederick County is over 236,000, and it's been the third fastest growing county in the state over the last five years. By 2030, population is projected to increase 50 to 80 percent for several parts of the county, including the City of Frederick.

Compared to the rest of the state, Frederick County is less racially diverse. Over three quarters of the population are non-Latino white, compared to just over half the state's population. The county has a higher percentage of college educated residents compared to the rest of the state, and fewer (8 percent versus 11 percent) residents without a high school degree. Median household income is also higher in Frederick County compared to the state (\$84,570 versus \$73,538), along with the percentage of owner-occupied housing (75 percent versus 68 percent). Similar to the state, the Frederick County working

population is car-dependent, with more than three-quarters of residents commuting alone by car, truck, or van.

The City of Frederick is the seat of Frederick County. With a population of nearly 69,000, Frederick is the 2nd largest city in Maryland. The City rests at the foot of the Catoclin Mountains. Carroll Creek flows through the city and into the Monocacy River, which feeds into the Potomac River, and eventually the Chesapeake Bay. While the city is proximate to these important natural resources, it is also the northern anchor of the I-270 high-tech corridor, and is located 50 miles from both Baltimore and Washington, D.C. Frederick's location has supported a diverse economy, which includes the U.S. Army's Fort Detrick research facility, the Frederick Municipal Airport (the second busiest airport in the state), a vibrant retail and entertainment center in its historic downtown, and a cluster of pharmaceutical, biotechnology and IT firms.

On a number of demographic measures, the City of Frederick more closely mirrors the state than the County. It is more diverse, with the percentage of non-White and/or Latino residents at nearly 41 percent, compared to 20 percent for the county and 44 percent for the state. The City's poverty and unemployment rates are also closer to the state than the county. Median household income, at nearly \$66,000, is lower than both the county and the state. One area where Frederick stands out from the state is its highly educated population: 37 percent of residents obtained have at least a Bachelor's degree, versus 20 percent for the state and 23 percent for the county.

How is this Plan organized?

This Sustainability Plan focuses on eight interconnected sectors of sustainability: Transportation Options, Energy Solutions, Waste & Recycling, Impervious Surfaces & Built Environment, Urban Canopy & Green Spaces, Food & Nutrition, Water Quality & Water Supply, and Air Quality. Each of these sectors is linked to the others and should be considered in future City design and planning efforts.

Inherent in each of these sectors are economic, social, and environmental aspects. This Plan does not directly address these aspects, however they have been carefully considered as components of each suggested policy and action.

This Plan incorporates goals, policies, and actions for each department within the City's operations that will benefit residents, business owners, visitors, and City employees.

Transportation Options

The City has made great strides to provide a range of transportation options to access amenities, work, and home. Many amenities are walkable, bikeable, or accessible via mass transit and this accessibility is improving within the City each year. Reducing the need for car trips will help improve air quality, reduce the overall carbon footprint, and help lead to a healthier City.

One alternative transportation option is the Shared Use Path Plan which provides pedestrians and cyclists a route separated from automobile traffic. In 2016, two sections of shared-use path were connected between Waterford and Baker parks, linking the City's western reaches along Rock Creek with the City center and east to the MARC train station. Ultimately, the planned Rails-With-Trails paths, shared-use paths, on-street cycling lanes, and shared lane markings will help create alternative transportation corridors that connect the MARC station at the City center with the Tuscarora path and Worman's Mill, the Golden Mile, Monocacy Boulevard, and the Monocacy River. Portions of East Street that connect the paths have already been marked with shared lane markings for bicycle traffic, providing part of a north-south access corridor. For this entire improvement to come to fruition, as in many parts of the City, developer-built or contributions are most integral to the program's success. As of 2014, approximately 10 of the planned 25 miles of shared-use pathways have been constructed.

According to Walk Score®, the City of Frederick is a car-dependent city with a score in the mid-forties out of 100. Certain areas, such as the streets immediately surrounding City Hall, score in the 90s. The Walk Score® algorithm analyzes nearby amenities for locations, intersection density, average block length, and other metrics to measure the walkability of a specific location. Walk Score® indicates that scores 90 and above mean that daily errands do not require use of a car. By contrast, cities that score 25 to 49 indicate that most errands require access to a car.

According to the 2014 AARP *Sidewalks: A Livability Fact Sheet*, "retail properties with a Walk Score® ranking of 80 out of 100 were valued 54 percent higher than those with a Walk Score of 20 and had an increase in net operating income of 42 percent." In addition, homes with a five-foot sidewalk and two street trees will sell for \$4,000 to \$34,000 more and in a shorter time frame. Increasing the Walk Score® even by one point, could lead to property value increases of \$700 to \$3,000, according to *Walking the Walk: How Walkability Raises Housing Values in U.S. Cities*. Increasing walkability throughout the City will help bring foot traffic to businesses, reduce dependency on autos, promote healthier lifestyles, and reduce the City's overall carbon footprint.

In addition, the Frederick MARC station provides an excellent alternative via heavy rail to those commuters who work outside the City. TransIT Services of Frederick County operates a robust connector, shuttle, and para-transit network throughout the City and County with new stops added as development occurs. About 85 percent of all of TransIT's Connector Route ridership activity occurs within the City of Frederick. The Connector Routes provided more than 761,000 passenger bus trips, or about 2,700 trips each weekday and about 1,340 trips on Saturdays in the 2015 fiscal year. The downtown Frederick MARC Train Station/TransIT Center on East Street is by far the most active location, where individuals transfer between buses and the MARC. The Maryland Transit Administration (MTA)

offers several commuter buses, which contribute to the overall ridership with about 360 riders on the 515 Commuter Bus route each morning. Greyhound has four daily buses to Baltimore every day of the week. In addition, about 110 passengers ride the three MARC trains out of downtown Frederick each weekday morning. Finally, the BayRunner shuttle operates nine shuttles to BWI from downtown Frederick and the Municipal Airport each day.

Each of these alternative transportation options provides choices for less reliance on autos. While these accomplishments demonstrate significant dedication to alternative transportation and increased access for all, there are areas of the City that lack walkable and bikeable streets and paths.

Successes to Date:

1. *Complete Streets Policy:* Complete streets are streets for everyone. They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safer for people to walk to and from train stations. Creating Complete Streets means transportation agencies must change their approach to community roads. By adopting a Complete Streets policy, communities direct their transportation planners and engineers to routinely design and operate the entire right of way to enable safe access for all users, regardless of age, ability, or mode of transportation. This means that every transportation project will make the street network better and safer for drivers, transit users, pedestrians, and bicyclists—making your town a better place to live.
2. *Bicycle parking in new development.* Depending on the type of development, there are a minimum number of bicycle parking spots required, according to the City's Land Management Code Section 607. Minimum parking requirements for some development could be reduced if more than the minimum bicycle spaces are provided. As the City strives to appeal to multiple age groups and understanding that several of those age groups prefer walkable and bikeable communities, bicycle parking will be an important part of a sustainable city.
3. *Bicycle parking.* Through a cooperative agreement with Downtown Frederick Partnership, 24 bike racks have been installed in the downtown area.
4. *Alternate transportation.* Minimum parking requirements for development can be reduced if projects are within ¼ mile of a public transit or bus stop, according to the City's Land Management Code Section 607 (4). This encourages walkable communities, increases public transit usage, and reduces the need for parking spaces for some development.
5. *Shared lane markings.* Also called sharrows, these lane markings indicate that bicycles will be sharing the roadway. Shared lane markings are now incorporated, where feasible, in new construction and when roads are resurfaced. Bicycle ridership data collected at 7th Street, the longest-running and most consistent data set for the City, suggests that after sharrows were installed in fall 2011, ridership immediately doubled.

Since that time, ridership has quadrupled. The network of shared lane markings will also help connect a bicycle loop around the City.

6. *Bicycle Friendly Community*. The City was recertified as a Bronze Level Bicycle-Friendly Community in 2015.
7. *Bike/Ped Committee*. The Bicycle Pedestrian Advisory Committee advises City officials and staff on the sound development, management, and safe use of the City of Frederick's pedestrian and bicycle systems as they relate to infrastructure, accessibility, and promoting the benefits of these systems.
8. *Sidewalks*. The City completed 2,000 feet of missing sidewalks along Route 40 and about 3,000 feet on Maryland Route 26.
9. *Shared Use Path underpass*. The City began construction on the US15 bicycle and pedestrian underpass that will connect the shared use path on the west side of the City with the east.
10. *More bus shelters*. The City entered into an agreement with Frederick County TransIT for more bus shelters, in which the City allows for the placement of shelters with advertisement material displayed on the side of the shelters.

Suggested Policies:

1. *Approve a Bicycle/Pedestrian Plan*: The City is working on a Bicycle Pedestrian Master Plan that will recommend improvements, offer a prioritization strategy, and maintenance guidelines for effective bicycle and pedestrian infrastructure.
2. *Establish a Shared Use Path Siting Goal*: Establish a goal for all residential developments to be located within ½-mile of a shared use path.
3. *Establish a Shared Use Path Installation Goal*: Establish a goal to create five miles of Shared Use Path each year and would require a Capital Improvement Plan (CIP) be established to do so.
4. *Establish standard for bike rack design*: Bicycle rack designs vary and some make securing a bicycle difficult. Establishing a rack standard across the City will help provide consistently secure and efficient parking for cyclists.

Suggested Actions:

1. *Electric Vehicle Plan*. Explore the siting possibilities of electric vehicle charging stations throughout the City by creating an Electric Vehicle Plan. As the demand for electric vehicles grows, the demand for spaces to charge them also will grow. City staff will establish a prioritization plan to explore locations where charging stations might be installed and determine how the stations might be funded and maintained. Revisions to the Land Management Code will be required and incentives may be included. Most

building codes have been revised to accommodate charging stations, but a review of those codes is needed to confirm ease of development and predictability.

2. *Downtown Circulator*. To better balance the congested parking decks of the downtown area and to move people around more continuously, a Downtown Circulator bus is being explored.
3. *Zero-Emission MOU*. The State of Maryland is a signatory on the *State Zero-Emission Vehicle Programs Memorandum of Understanding*. By signing this document, the State is well positioned with a critical strategy for achieving goals to reduce transportation-related air pollution, including criteria air pollutants, mobile source air toxics, and greenhouse gas emissions (GHGs), enhance energy diversity, save consumers money, and promote economic growth.
4. *Workplace Sustainability Efforts*. Explore telecommuting and flexible work schedule options for City employees. Alternate work schedules could help reduce energy use in office spaces and lower the City's overall carbon footprint by reducing emissions from commuting.
5. *Bicycle Racks*. Increase the number of bicycle racks throughout the City. The City of Frederick is one of the fastest growing municipalities in Maryland and is now the second largest incorporated municipality in the state. Research noted in *Transportation and the New Generation* from the US Public Interest Research Group notes that in 2009, residents aged 16 to 34 took 24 percent more bicycle trips than in 2001, spurring a demand for cycling infrastructure. The 2014 study *Economic, Demographic, and Real Estate Dynamics in Frederick, MD*, shows that nearly 33 percent of the City's residents are aged 25 to 44, with a median age of 34.5. Providing safe and convenient spaces for bicycle parking will help encourage more foot traffic for local businesses and reduce the overall carbon footprint of the City.
6. *City fleet improvements*. Improve the City fleet with Maryland Energy Administration and other grant funds. As City vehicles are retired, some will be replaced with hybrid, electric, and natural gas vehicles as funding and resources permit. Over time, the fleet will be more fuel-efficient, saving the City in fuel costs and reducing its carbon footprint. The State is exploring a 20 percent purchase rate of zero-emission vehicles (ZEV) by 2025.
7. *Sidewalk spaces*. Explore the reallocation of sidewalk space and parking in specific downtown locations. This would allow for wider sidewalks in the busiest part of the downtown area. It would provide a greatly improved pedestrian experience and allow for a better sidewalk café program and better pedestrian connectivity between three parking decks, Carroll Creek Park, C. Burr Artz Public Library, Weinberg Center, and the County Court House.
8. *Crosswalks*. Develop a prioritized list for the addition of crosswalks in appropriate locations throughout the City so as to facilitate safe usage of transportation facilities by all modes of transportation.
9. *Bus on Shoulder*. The Bus on Shoulder (BOS) operation allows authorized transit buses with trained drivers to operate on the shoulders of selected freeways at low speeds

during periods of congestion in order to bypass congested traffic and maintain transit schedules. The BOS operation is a low-cost treatment that can provide immediate benefits to transit whenever travel is experiencing moderate to heavy degrees of congestion. BOS is being studied as a pilot program on I-270 from the Montgomery County Line to Maryland Route 85. The MTA, State Highway Administration (SHA), and Maryland State Police will be needed for the program to be successful. This is an achievable goal to increase ridership and to help reduce congestion in the corridor.

10. *Mass transit options.* The MARC Growth and Investment Plan calls for the addition of 3 a.m. trains and 3 p.m. trains to Frederick in 2025, in 2030 a mid-day commuter and finally, after 2030, weekend service. The new 515 MTA Commuter Bus serves the downtown MARC Station to Monocacy Crossing and Urbana with 3 a.m. and 3 p.m. buses. Future Park and Ride facilities that will handle as many as 375 cars will be built at Monocacy and US Route 15.
11. *Bicycle-Friendly.* Work toward achieving a silver level Bicycle Friendly Community designation. The City was recertified as a bronze level Bicycle Friendly Community through 2019.
12. *Public Transportation Subsidy Program.* The Public Transportation Subsidy Program (PTSP) allows for subsidizing transit use to employees and should be marketed to City employees and encouraged among City businesses.
13. *Data Collection.* Expand the bicycle and pedestrian counts to include more locations throughout the City to determine where citizens are using alternative modes of transportation.

Transportation for the Future:

As the City encourages more alternative transportation by installing more bike racks and adopting a Complete Streets Policy, the City also should help find ways for staff and residents to adjust travel behavior for trips under three miles. According to MWCOG's report, about 45 percent of non-work trips and 18 percent of work trips are projected to be less than three miles by 2030. A greenhouse gas study completed by University of Maryland Program for Action Learning in Sustainability showed that 43 percent of City staff commuted fewer than six miles round-trip in 2013. That commuter group could be encouraged to find alternative transportation methods, such as bicycling. This action alone could reduce emissions from commuting by 14 percent.

The City also plays an important role in the region's transportation network. As Frederick's and the region's population grows, alternative transportation connections within the City and to other regional destinations will be more critical to a viable transportation network.

Potential Partners:

Transportation Services Advisory Council (TSAC)
City of Frederick Bicycle Pedestrian Advisory Committee (BPAC)

Frederick Area Committee for Transportation (FACT)
Transportation Planning Board (TPB), the Region's Metropolitan Planning Organization (MPO)
Mid-Western Regional Traffic Safety Program Manager-Maryland Highway Safety Office
State Highway Administration—District 7 and Regional and Intermodal Planning Division
Maryland Department of Transportation—Office of Planning and Capital Programming

Resources:

AARP. [Sidewalks: A Livability Fact Sheet. 2014.](#) PDF.

Allen, Tanya, et al. [City of Frederick Carbon Footprint and Energy Profile: A Local Government Greenhouse Gas \(GHG\) Emissions Inventory.](#) Fall 2015.

Bansal, Monica, and Morrow, Erin. ["What Would It Take? Transportation and Climate Change in the National Capital Region."](#) May 2010. PDF.

City of Frederick. ["City of Frederick Land Management Code Article 6 Environmental Regulations."](#) 2005. PDF.

Cortright, Joe. [Walking the Walk: How Walkability Raises Home Values in U.S. Cities.](#) August 2009. PDF.

Davis, Benjamin, Tony Dutzik, and Phineas Baxandall. ["Transportation and the New Generation: Why Young People Are Driving Less and What it Means for Transportation Policy."](#) Apr. 2012. PDF.

National Capital Region Transportation Planning Board. [CLRP 2015 Amendment: Financially Constrained Long Range Transportation Plan for the National Capital Region.](#) 2015.

Redfin. [How Walk Score Works.](#)

Sage Policy Group. ["Economic, Demographic, and Real Estate Dynamics in Frederick, MD."](#) Oct. 2014. PDF.

The League of American Bicyclists. ["Becoming a Bicycle Friendly Community."](#)

Energy Solutions

Many City-owned buildings have received upgrades to lighting and HVAC systems to reduce energy costs and reduce use of power generated by fossil fuels. Through a Maryland Smart Energy Communities (MSEC) grant the City has established baselines for its utilities and its fleet and is prioritizing projects. The grant provides for energy efficiency upgrades, such as lighting in City Hall, William Talley Recreation Center, and for street lights in the 2015 fiscal year. The aging lighting infrastructure presents a challenge to upgrading to the most efficient lighting choices, but these upgrades will help the City meet its MSEC goal of reducing per-square-foot electricity consumption by 15 percent over the next five years, as established via policy in November 2014.

The City of Frederick uses nearly 24,000,000 kilowatt hours of power per year, based on the MSEC 2013 baseline report for City-owned structures. The report also revealed that 44 percent of the City's energy usage is for water facilities. Street lights are 25.2 percent of the total. Occupied spaces, such as offices, use 17.4 percent and other non-occupied spaces, such as fields and parks, use 13.4 percent.

To reduce energy usage, the City is beginning to update its street lights to the latest technology. Many of Frederick's street lights are difficult to maintain because they date back to the 1950s and 60s. The updates will also help reduce maintenance costs and will help the City meet its energy efficiency goals.

Maryland allows customers to choose their energy supplier. The City seeks the least expensive energy options, which can mean power supplied by burning fossil fuels. As renewable energy sources, such as solar and wind become more common, they are becoming more cost competitive and available as part of energy portfolios.

In addition, Frederick already has a few hybrid vehicles in its fleet. The high cost of fuel-efficient, hybrid, natural gas, and electric vehicles make it difficult to green the fleet, but increasing the number of these vehicles will help the City reduce its carbon footprint and improve air quality and save in fuel costs.

To establish itself as a leader in green energy solutions, the City should endeavor to find ways to incorporate solar in public spaces, such as parking lots, parks, and other visible areas that can serve to increase resiliency, reduce reliance on fossil fuels, and as an educational opportunity. In addition to the goal to reduce energy consumption, the City also adopted a goal of generating 20 percent of its energy from renewable sources. The co-generation facility installed at the City's wastewater treatment plant will help meet part of that goal and the other options such as solar will help meet the remainder of that goal. In addition, the City should explore the feasibility of electric vehicle charging stations coupled with solar for residents and its own fleet and possible incentives for drivers of those vehicles.

Successes to Date:

1. *Energy Efficiency Policy:* The City adopted an energy efficiency goal to reduce energy usage of all City-owned buildings by 15 percent in five years from the baseline year

of 2013. Various lighting upgrades, particularly of street lights, will help reach this goal.

2. *Renewable Energy Policy*: The City adopted a renewable energy goal to generate 20 percent of the City's energy needs by 2022. This goal is based on the baseline year of 2013.
3. *Co-generation at the Wastewater Treatment Plant*: The City implemented a co-generation facility at its wastewater treatment plant, which will help meet 39 percent of the renewable energy goal. Co-generation is a strategy to capture anaerobic digester gas and convert it to energy.
4. *Energy Education*: City residents can take part in Frederick County's Green Homes Challenge. Residents can become certified for various green practices, including energy efficiency. The program tracks energy consumption and GHGs to help residents better understand how they use power and how they can become more efficient energy users.
5. *Low-income assistance*. The City's Community Development team helped 13 low-income property owners install insulation, window replacements, and other energy upgrades to help reduce energy bills and increase energy efficiency in 2011. This program could be repeated in the future if staff and funding are available.
6. *Solar Project*. Several sites have been identified as potential locations for ground-mount solar arrays in Frederick County. Through power purchase agreements, these sites will allow the City to net meter several electricity accounts to reduce power costs and the City's overall carbon footprint.

Suggested Policies:

1. *Adopt a Petroleum Reduction Policy*. The City's fleet is aging and as older vehicles are retired, replacements should be hybrids, electric, or other alternatively-fueled options where feasible, especially for light-duty vehicles. The City could recognize significant savings for each converted vehicle.
2. *LEED Silver or Equivalent*. New City buildings or renovations of existing buildings should be constructed to the LEED Silver level or equivalent to ensure energy efficiency and improved water quality.

Suggested Actions:

1. *Solar Opportunities*. Explore solar opportunities on City-owned land and on land outside the City boundary.
2. *Explore resiliency opportunities*. Explore opportunities throughout the City that might help provide some resiliency during natural disasters and other significant events that can disrupt City services. A resiliency project has the potential to provide power to the Department of Public Works (DPW) building and the William Talley Recreation Center, two possible shelters for emergency situations. The resiliency plan also will take into account existing emergency protocols.

Transportation into and out of the City, including the airport, will also be considered. Both DPW and the airport should be powered at 100 percent during emergency situations. A backup generator will be installed at DPW to help with resiliency. Staff already has taken steps to begin exploring opportunities for resiliency projects.

3. *Third-party building certification.* Investigate and develop third-party building certification (TPC) protocols and implementation strategy to reduce operations costs and energy consumption in City-owned facilities. This will evaluate current strategies, operational protocols, employee awareness and expertise, procurement policies, identify key vendors, and assess portfolio size and building functions. This will provide the City with a report for implementing TPC in future contracts.
4. *Energy audits.* Conduct energy audits on all City buildings. This will help prioritize additional projects that could help further reduce energy costs and the City's carbon footprint.
5. *Additional energy savings.* Explore the potential for additional energy savings with additional motion sensors, weatherization, and other opportunities in City-owned buildings.
6. *Energy-efficient street lights.* Continue replacement of aging street lights with the most efficient lighting options. The City has been prioritizing the replacement of the oldest street lights, some dating back to the 1950s and 60s. Street lights make up about 25 percent of the City's overall energy usage.

Potential Partners:

Maryland Energy Administration MSEC program

Mid-American Energy

Washington Gas

Maryland Energy Administration (MEA) with the Maryland Smart Energy Communities (MSEC) program

Energy Solutions for the Future:

With policies specifying goals for energy efficiency and renewable energy resources, the City is well on its way toward being more sustainable. As these goals are met, the municipality grows, and technology improves, the City will need to revisit these policies and actions to continue improving sustainability.

Exploring the opportunity to purchase more power generated from solar, wind, and other renewable resources could benefit residents and businesses as power generated from burning fossil fuels adds to particulate matter pollution in the region and increases the overall carbon footprint.

When coupled with solutions for transportation and air quality, energy solutions will help move the City toward a more sustainable future.

Resources:

City of Frederick. [Resolution No. 14-22: A Resolution to adopt a Policy Concerning the Use of Renewable Energy Sources as part of the Maryland Energy Administration's Smart Energy Communities program](#). 2014. PDF.

City of Frederick. [Resolution No. 14-23: A Resolution to adopt a Policy for the Reduction of Electricity Consumption as part of the Maryland Energy Administration's Smart Energy Communities program](#). 2014. PDF.

Frederick County. [Green Homes Challenge](#).

Maryland Department of Environment. "Maryland Electric Vehicle Infrastructure Council Local Government Outreach Project: Making Local Government EV Ready." City of Frederick Municipal Annex, Frederick, MD. 24 Jan. 2014.

Waste & Recycling

Waste generated by a city is one visible indicator of its sustainability. Many communities throughout the nation are moving toward a net-zero waste goal, which means increased recycling and composting and reduced trash that is landfilled or incinerated. None of the City-generated trash, recyclables, or compostables are processed or stored within the City. Trash is landfilled in or transferred out of the County, yard waste is stored and composted in Frederick County, and recyclables are processed at a Frederick County facility.

Approximately 1,450 to 1,600 tons of trash is collected from City residents and businesses each month. Each year, the City spends nearly \$1.5 million in tipping fees to Frederick County to landfill that waste or transfer it out of the County. The City permits up to 180 gallons of trash per household and up to 320 gallons of trash per business each week.

Recycling is not mandated in the City, but approximately 91 percent of residents have a recycling cart, according to April 2014 Frederick County data. State law requires that all residents have access to recycling services, including apartment and condominium renters. Despite the high number of carts, only 51 percent of them are set out for pick-up. Fewer than 300 tons of recyclables are collected each month in the City, a total annual tonnage of 3,578, or about 16 percent of the City's overall waste.

The tipping fee for trash is \$69 per ton. The cost of recycling is \$25 per ton. If just 10 percent of the 18,400 tons of the City's trash were recycled, the City could save about \$81,000 annually.

The City accepts yard waste to be composted at a Frederick County facility. However, household kitchen compost has not been addressed. The City already is exploring the potential for processing compost from restaurants at its wastewater treatment plant, but some households could compost kitchen waste in home gardens now. Ongoing compost education will be needed to help residents understand the benefits of home compost and to address some common misconceptions, such as foul odors and attracting animals. If just 10 percent of the City's trash were diverted for home compost use, the City could save about \$127,000 annually in tipping fees.

Reducing trash, increased recycling, and the addition of composting will lead to fewer City funds spent on tipping fees and reduced strain on the landfill. The City will be challenged with changing the way residents think of trash, recyclables, and compostables over the next few years.

Successes to Date:

1. *Trash, recyclables, and compost.* City staff conducted an informal study of the City's residential trash to determine the recycling and home composting potential. Each ton of recyclables that is thrown into the trash equates to \$69. The study showed about 24 percent of the bagged trash is actually recyclable. Waste that was considered in the study included vegetable scraps and yard waste that could be composted at home or through the yard waste collection program. Meat, dairy, bones, and fats were not included in the compostables weight. The potential

compostables made up about 22 percent of the waste that was taken to the landfill. Based on this information, it is estimated that City residents could potentially reduce recyclables thrown in the landfill by nearly 138,000 pounds and compostables by more than 136,000 each year.

2. *Recycling at the stadium.* The City's Green Initiatives Team (GIT) helped Reduction in Motion perform a waste audit during a game day at Keys Stadium in summer 2015. The results showed that about 20 percent of the waste at the stadium is recyclable. Reduction in Motion provided a report with actionable items to the Keys to help encourage more recycling.
3. *Recycling at special events.* The City now requires that recycling containers be provided at all special events.
4. *Freecycle Roundup.* This program allows City residents the opportunity to drop off unwanted items at no cost twice per year in spring and fall. Multiple non-profits are approached to participate in the program to reuse items that are dropped off. The City separates the remaining items, including trash, recycling, appliances, and e-waste to dispose of them accordingly.
5. *Leaf and yard debris pickup.* In an effort to reduce impacts on storm drains and reduce compostable materials from going to the landfill, the City picks up leaves and yard debris from residents.
6. *Recycling at events.* Maryland enacted a new provision requiring event organizers to provide recycling at any event that includes temporary or periodic use of a public street, publicly owned facility, or public park, serves food or drink, and is expected to have 200 or more persons in attendance.

Suggested Policies:

1. *Adopt a recycling goal.* Establish a goal to increase recycling to help the City work toward reducing waste going to the landfill and ultimately reducing tipping fees. This goal will be a good start for the City and will likely be increased over time as we learn more about the potential for recycling.
2. *Adopt at-home composting goal.* Establish a goal to increase at-home composting for single-family homes to help reduce the amount of waste going to the landfill. By weight, compostables make up more than 20 percent of the City's overall waste.

Suggested Actions:

1. *Waste study.* Conduct a formal study of the percentage of recyclables, organics, and reusables in the City's trash stream to help set goals for each. Knowing what gets thrown away will help the City set effective goals for recycling, composting, and trash. This may be accomplished through Frederick County efforts.
2. *Recycle bins in parks.* Provide recycling containers in parks. Recycling containers should be paired with trash receptacles in parks and on some streets. The City wants

to lead by example wherever possible and parks and streets present an excellent educational opportunity to do so.

3. *Go paperless.* Explore and implement paperless strategies where appropriate throughout internal City operations. Many applications for permits and planning as well as some informational notices could be posted on the City's website and residents could submit applications online as well. Paycheck notices, benefit announcements, timesheets, and other printed material should be evaluated for potential secure online access by employees.
4. *Recycling education.* Explore educational opportunities to increase recycling among residents who could recycle more and those who do not recycle at all.
5. *Waste options.* Explore waste options, such as pay-as-you-throw system for trash in conjunction with enhanced recycling for all residents and businesses. This system will immediately reduce waste and increase recycling, but can only work if all components are in place.
6. *Adopt-a-programs.* Create an adopt-a-street, trail, creek, stream, and/or river program to pick up trash along these corridors. Volunteer efforts would be organized for these activities and appropriate signage for the corridors would be put in place. Volunteers could be organizations, businesses, or individuals. Some organizations sponsor yearly cleanup events, such as Downtown Frederick Partnership's *Bring a Broom Saturday* and the Common Market's annual Watershed Cleanup.

Potential Partners:

Frederick County
MEA MSEC program
Downtown Frederick Partnership

Waste & Recycling for the Future:

The primary immediate goal for the City should be to establish a waste baseline and goals for a holistic reduction of trash, increase in recycling, and in-City compost processing. Once in place, the City can look toward reducing its waste by 75 to 90 percent and recognizing significant savings in tipping fees. The key to successfully reducing waste will be progressively increasing goals for waste, recycling, and composting.

Consistent yearly evaluations will be needed to determine progress. The City may also choose to explore other avenues of waste reduction similar to neighboring jurisdictions, such as fees for each disposable plastic or paper carryout bag and a ban on plastic-foam food and drink containers if it is determined that these items make up a significant portion of the waste stream.

Resources

City of Frederick. "[Yard and Leaf Waste.](#)"

Frederick County. [“Solid Waste-What’s Next?”](#)

Impervious Surfaces & Built Environment

From parking lots to lighting, the built environment can be a significant source of many kinds of pollution and contributes to increased energy use. More specifically, impervious surfaces degrade water quality and habitat, increase water and air temperatures and stormwater runoff. A sustainable Frederick will mean finding balance between developed spaces and the natural environment.

Approximately 30 percent of Frederick is impervious with rooftops, parking lots, sidewalks, and other hardscape. Some areas can be up to 50 percent impervious. The heat island, an urban area that is typically warmer than the surrounding rural landscape, can mean a temperature increase of between five and 22 degrees Fahrenheit in the City compared to surrounding rural areas, according to the U.S. Environmental Protection Agency. Impervious surfaces cause much of this temperature increase.

Maryland's stormwater regulations are some of the most stringent in the nation, however, development continues to add impervious surfaces to areas that once were forest or open land. Stormwater from impervious surfaces runs off into the nearest waterway without the benefit of being filtered through plant roots and soil, carrying pollutants directly to the stream. With little or no vegetation to help filter stormwater and provide shade, stream temperatures increase and habitat can be degraded with excess sediment and algae blooms.

Alternatives, such as cool roofs, increased canopy coverage, and pervious pavement could be costly to install and maintain, but will offer significant positive impacts to water quality, energy efficiency, and health of residents.

While green building practices help the property owner in lowering utilities and creating a more sustainable community, the City of Frederick also sees benefits in reduction of water and sewer demands. The Green Building Tax Credit is meant to help offset the higher cost of green construction and to encourage the construction of more sustainable buildings. While the tax credit does not completely offset the higher cost of green construction, it does offer an incentive. The City of Frederick is a community that embraces green building practices and rewards property owners who elevate their buildings to this higher standard.

The built environment also has an impact on access to jobs and amenities, health of residents, and even safety. The majority of every age group from 18 to 60-plus prefers to live in smart growth neighborhoods, according to the *Transportation and the New Generation* report by US Public Interest Research Group. To attract multi-age demographic, the City should continue its smart growth efforts, including walkable, bikeable communities, infill, and repurposing existing spaces.

Successes to Date:

1. *Green buildings tax credit.* The City adopted Ordinance number G-14-25, a tax credit for high performance buildings. This ordinance provides credits for silver, gold, or platinum LEED-certified and equivalent standard rating for both commercial and

residential buildings. Credits are offered on a tiered schedule dependent on the level of certification.

2. *Culler Lake*. The City is moving forward on Phase I of the Stormwater Plan for Culler Lake in Baker Park. This project includes dredging, installing gravel wetlands and mechanical systems to remove nutrients and sediment, replacing the east wall, and reconstructing the iconic fountain. The existing fountain will be dismantled, but will be used as fish habitat in the bottom of the lake.
3. *Flexi-pave*. Flexi-pave, a porous sidewalk option, will reduce compaction to street tree root zones, will allow stormwater to flow through the sidewalk, and will reduce sidewalk heaving because it stretches around root zones. As trees and compacted soil in pits are replaced, Flexi-pave could be an option to help with stormwater mitigation and tree health. Several tree pits were covered with Flexi-pave as a pilot project in 2015 to determine if it is a viable option for street trees in the downtown area.

Suggested Policies:

1. *Adopt a Dark-sky outdoor lighting policy*. Dark-sky lighting is an excellent way to help reduce light pollution, which can impact certain animal populations, and directs light where it is needed. Dark-sky lighting is especially helpful in areas where street lights can spill light to neighboring homes and in areas where pathways or roads traverse through green corridors. The Land Management Code Article 730(h) currently specifies that there shall be no light spill-over at the lot line for outdoor lighting in new developments, but does not specify dark-sky compliant outdoor lighting fixtures nor does it specify light pollution reduction measures within a site.

Suggested Actions:

1. *Better design*. Encourage redevelopment and infill development as these types of development do not typically require additional infrastructure. Redevelopment encourages the repurposing of existing developed spaces. Infill development takes advantage of existing undeveloped spaces and dedicates them to better fit with the current needs of an area.
2. *Stormwater capture*. Explore incentives for capturing beyond the required one inch of stormwater. Stormwater runoff can be a significant contributor of non-point source pollution. Capturing more runoff and treating on-site is ideal for improving water quality.
3. *Soil compaction and stormwater*. Explore strategies for best management practices to improve after-construction soil infiltration rates in new development. Soil compaction rates are typically about 95 percent to support structures. Soil surrounding new structures often is just as compacted reducing its ability to

adequately absorb runoff. When post-construction deep tilling, chisel plowing, and compost amendment strategies are combined, runoff volume can be reduced by up to 91 percent, according to the 2003 report “Quantifying Decreases in Stormwater Runoff From Deep Tilling, Chisel Plowing, and Compost-Amendment.” In its Best Management Fact Sheet 4: Soil Restoration, the Virginia Cooperative Extension suggests that soil restoration could remove as much as 75 percent of runoff volume. Exploring these types of strategies in new development will help improve water quality for the City and its downstream neighbors.

4. *Pervious options.* Explore incentives for installing pervious hardscape for homeowners and businesses. Pervious hardscape is another way to help keep stormwater runoff on site and improve water quality. Because stormwater fees for homeowners are based on a generalized square footage of impervious surface, reducing that fee, though already minimal, could incentivize homeowners to reduce their overall impervious areas.
5. *Homeowner Incentives.* Explore incentives for homeowner downspout disconnections. Disconnecting downspouts can help keep more stormwater on site, which can reduce runoff and improve water quality. Similar programs in other areas have reduced runoff from private property by 50 percent or more, which can have a significant impact on water quality.
6. *Incentives for impervious reductions.* Explore incentives for impervious area reduction on existing properties that are not necessarily being redeveloped. Reducing overall impervious surfaces, particularly prioritizing those nearest waterways, will help improve water quality.
7. *Pervious surfaces for the City.* Require City-owned spaces to install pervious pavement or other pervious hardscape where appropriate.
8. *Green buildings.* Require new City-owned buildings to be built to LEED or equivalent standards.

The Built Environment for the Future:

Stormwater runoff should be managed so that much of it is treated on site. The current requirement is to treat the first inch of runoff, but allowing more stormwater to filter through swales, rain gardens, and other spaces will further improve water quality. Groundwater resources will be replenished more readily, which contributes to baseflow in streams and rivers, keeping waterways at viable levels during the summer months when precipitation may not be adequate enough to replenish surface water. In addition, treating more stormwater onsite will help reduce the pollutant load entering waterways. Soil acts as a natural filter and can help remove toxics that might otherwise go directly to the waterways. Incorporating more environmental site designs (ESDs) and innovative post-construction soil treatments will help create healthier waterways. In addition, innovative features, such as living walls, green roofs, pervious pavement, and others should be considered in the context of the overall design to help improve air quality, increase energy efficiency, and add to the aesthetics. While some of these practices are more costly upfront, the intangible benefits could outweigh the costs.

Potential Partners:

Land Use Council of Frederick County
Maryland Department of Environment

Resources:

Balousek, Jeremy D. "[Quantifying Decreases in Stormwater Runoff From Deep Tilling, Chisel Plowing, and Compost-Amendment.](#)" 2003. PDF.

City of Frederick. "[City of Frederick Land Management Code Article 7 Environmental Regulations.](#)" 2005. PDF.

City of Frederick. "[City of Frederick Ordinance G-14-25 Tax Credit for High Performance Buildings.](#)" 2014. PDF.

City of Frederick. "[Resolution No. 15-13: Obesity Prevention—Healthy Eating Active Living.](#)" 2015. PDF.

Davis, Benjamin, Tony Dutzik, and Phineas Baxandall. "[Transportation and the New Generation: Why Young People Are Driving Less and What it Means for Transportation Policy.](#)" Apr. 2012. PDF.

Virginia Cooperative Extension, Virginia Tech. http://pubs.ext.vt.edu/426/426-123/426-123_pdf.pdf

Urban Canopy & Open Spaces

The health of the City's waterways, its air quality, and its green spaces rely on a robust tree canopy, however demand for open spaces also is an important consideration. Both tree canopy and open spaces are vital to a healthy and sustainable city. The City is tasked with maintaining the balance of open and green spaces for sports and leisure, increasing canopy coverage, and providing space for community gardens.

According to a 2009 urban tree canopy study, only 14 percent of Frederick is forested, significantly less than the goal of 40 percent. Trees can help clean the air by capturing particulate matter, taking up carbon dioxide, absorbing excess nutrients through their root systems, and can help curb the urban heat island effect, among other benefits. The City is planting canopy in passive parks and along stream corridors, but there is not enough land to meet the goal. Planting on private property and privately-held community green space is vital to achieving 40 percent canopy cover.

In 2015, the City launched a pilot tree education effort for homeowners, focused in neighborhood advisory council (NAC) areas. The effort will help the City residents learn about canopy diversity and will educate homeowners about the importance of urban tree canopy on public and private lands.

In addition to tree canopy, the City's parks also provide open spaces. The City supports 72 parks, a total of about 677 acres of open space, plus the 185-acre Clustered Spires Golf Course. Park areas by NAC vary from three to 12 percent. About 624 of those acres are maintained in some way, providing opportunities for organized sports, gathering spots for events, and other leisure activities, in addition to serving as a space for trees. In addition, residential developments are required to provide open space that is maintained by the Homeowner Association.

According to the 2009 Tree Canopy Assessment, the public and private parks for land use contain a large amount of urban tree canopy coverage at 19 percent out of the overall 14 percent urban canopy coverage, second only to residential land use areas. The Parks Division with the direction of the City Arborist has supplemented plantings in the public parks using the Forest Conservation fee-in-lieu funds and placed protective easement agreements on the individual tree and forest areas.

Successes to Date:

1. *Parkland.* As stated in the 2010 Comprehensive Plan, the City currently has about eight acres of parkland per 1,000 people. Though the National Recreation and Park Association (NRPA) recommend 10 acres per 1,000 people, space constraints may make that impractical.
2. *Forest conservation.* The State Forest Conservation Act and City's Land Management Code Section 721 Forest Conservation mandates that development plans over 40,000 square feet implement a forest conservation plan and place approximately 15 to 20 percent of land in conservation easement.
3. *Enhanced open space.* The City has enhanced the public open space in the historic district with the expanded Carroll Creek Promenade to east Frederick. The City's

Promenade contains active centers as well as passive tree planting areas that visually enhance the space.

4. *Tree City USA*. The City is designated as a Sterling Level Tree City USA, one of only eight in the state of Maryland. Frederick also is the oldest Tree City in the state.
5. *Hargett Farm*. The City purchased Hargett Farm and is currently working with a consultant to create a feasibility study for this potential park site.

Suggested Policies:

1. *Establish and adopt tree preservation guidelines for City-owned property and developers of private property*. As trees age, they provide more benefits to air and water quality, as well as energy savings. Once a tree reaches about 12 inches in diameter at breast height (4.5 feet from the ground), the benefits to the overall canopy is significant so their preservation and care should be prioritized. Preservation will mean that older trees will continue to provide those benefits rather than being removed, pruned inappropriately, or replaced with a sapling that will not provide significant benefits for many years.
2. *Adopt a policy and update code to require a minimum of 85 percent native species with zero invasive species planted in commercial and City plantings*. The current Land Management Code Section “*Landscaping Standards*” Section 605(b)(1)(A) requires that any landscape plant or tree not be invasive, but does not address non-native species. The impacts of invasive and non-native species can be significant on surrounding natural lands. Considering the City’s proximity to Cunningham Falls and Gambrill state parks, Catoctin Mountain National Park, and the City’s own watershed, the use of native species is critical to helping maintain the natural character of those spaces. Birds, small mammals, and even humans carry seeds from urban and suburban landscapes into these natural areas, where they can impact the native communities.

Suggested Actions:

1. *Tree canopy education*. Educate the public about the importance of urban canopy. This effort began in fall 2014 with a tree identification class for about 15 residents. Through a planned online platform available to all, residents and businesses alike will be able to enter their tree data to help the City better determine the benefits of privately owned trees for stormwater mitigation, energy savings, and air quality. In addition to this ongoing effort, staff contributes a regular green column to the Frederick News Post and other outreach opportunities, such as the Friends of Baker Park’s Green Neighbor Forum.
2. *Tree canopy inventory*. Continue to inventory and assess tree canopy for better management. A tree canopy assessment helps the City understand forest as a land classification, which is useful in greening the municipality. The inventory specifically identifies what species make up the canopy, which can help move the City toward

sustainability. With new pests and diseases threatening forests each year, it is critical to understand what species might be lost or need to be treated to maintain a viable urban forest.

3. *Fee-in-lieu*. Evaluate the fee-in-lieu rate to incentivize planting onsite during development rather than contributing to the fee-in-lieu-of fund. As the City fills plantable land with active parks, development, and forest, it will become imperative for planting to occur onsite during new development and redevelopment.
4. *Usage study*. Evaluating open spaces and how they are being used will help the City better understand if its current open spaces are meeting the needs of the surrounding community. In addition, conducting a City-wide survey to identify the needs of the community as a whole will help better understand what kinds of open spaces are needed and where. Collecting this data may help secure more grant funding in the future.
5. *Planting goal*. Establish an annual tree planting goal to reach the overall goal of 40 percent canopy coverage by 2030.
6. *Bird count*. Establish a City-wide annual bird count to provide data about the health of parks and open spaces.
7. *Monarch habitat*. Monarch butterflies are imperiled because their habitat is limited. Monarchs require milkweed as a host plant for caterpillars, but the adult butterflies feed on nectar from many different flowers. By implementing simple actions, such as planting monarch butterfly habitat in unused green spaces the City currently mows, create a neighborhood challenge to engage homeowners associations to plant monarch habitat in common areas, and launch a public communication effort to encourage citizens to plant monarch habitat at their homes and neighborhoods, the City can move toward becoming a Monarch Butterfly Champion City through the National Wildlife Federation.
8. *Friends of Parks*. Establish more Friends of Parks organizations to assist the City in maintaining open spaces and forested areas for residents. Friends of Baker Park and Friends of Waterford Park are successful non-profits that contribute hundreds of volunteer hours and provide a connection to the communities they serve.

Urban Canopy & Open Spaces for the Future:

The City must balance open space and urban canopy with the need for infrastructure and development. With a goal of 40 percent canopy coverage, the City, its residents, and businesses will need to collectively work to increase tree planting and improve tree preservation efforts. As neighborhood canopies are inventoried, the City will have a better understanding where resources for planting and preservation should be directed and how those efforts fit into developed spaces.

Educational efforts will be on-going. As more residents and business owners learn about the importance of canopy and choosing the right tree for specific spaces, the City's urban forest will become more effective for air and water quality improvements and energy savings

Potential Partners:

Friends of Waterford Park

Friends of Baker Park

NACs

Frederick Bird Club

Resources:

City of Frederick. "[City of Frederick Land Management Code, Section 605 Landscaping Standards.](#)" 2005. PDF.

City of Frederick. "[City of Frederick Land Management Code, Section 721 Forest Conservation.](#)" 2005. PDF.

Pelletier, Keith and Jarlath O'Neil-Dunne. "[A Report on the City of Frederick's Existing and Possible Urban Tree Canopy.](#)" 2009. PDF.

Food & Nutrition

The City of Frederick is full of shops, museums, and restaurants, but has few grocery stores. Some grocers that are located in City limits are accessible via bus or car, but pedestrian and bicycle access to these healthful food outlets is a challenge. The West Frederick Farmers Market, one of several located within the City, was voted 15th in the nation, providing fresh locally-grown produce during the growing season. However, those markets are only open on specific days for a few hours.

According to the US Department of Agriculture Economic Research Service report *Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Economic Consequences*, urban areas are considered to have high walkability if a market is within ½ mile and medium walkability within ½ to one mile. Low walkability is access to markets more than one mile away. Some of the City meets the high and medium walkability for access to healthful food markets, but some areas, particularly in the eastern and northern portions of the City, have low walkability. Portions of the City's lower income neighborhoods support residents with grocers between ½ mile and 10 miles away. The data shows that most of our lower income residents lack walkable access to markets.

While there has been interest in a grocery store in the City's downtown area, the success of a grocery store is dependent on the number of people it serves. A technical report, *Business Performance in Walkable Shopping Areas*, indicates that a neighborhood shopping area of about 50,000 square feet, of which about 30,000 square feet are dedicated to supermarket, requires about 2,500 to 3,300 households or 5,000 to 6,000 people to support it. The Neighborhood Advisory Council (NAC) areas of 6, 9, and 11, the neighborhoods where there are the fewest healthful grocers, also have the fewest residential properties. There are a total of about 4,000 residential properties spread over the three NACs, suggesting that one NAC alone cannot support a grocery and that a grocery would no longer be walkable for many if it were located between the three NACs.

Based on Feeding America's Map the Meal Gap tool, the overall food insecurity rate is 7.4 percent for 2014, but the food insecurity rate for children is 16.4 percent. Feeding America estimates that there are 17,700 food insecure people in Frederick County. Food insecurity is defined by the U.S. Department of Agriculture as a "lack of access, at times, to enough food for an active, healthy life for all household members and limited or certain availability of nutritionally adequate foods."

Alternative options to bring walkable, healthful food options to those areas that currently rank low on the walkability scale will be challenging. Year-round and mobile farmers markets could help meet the needs of those individuals and allow vendors to circulate for additional customer base to support such operations. These efforts may require additional support for local farmers to provide year-round produce.

Frederick City residents also have expressed increased interest in growing food that is only a few feet or miles from home. Willow Brook and Hargett Farm parks offer a total of 72 plots of community garden space, each plot being 1,250 square feet. More than two acres of park space has been dedicated to community gardens, allowing garden space for City residents that may not otherwise have access to land to grow their own food. Seed of Life farms 10 acres of Hargett Farm and the City also leases other

small pieces of land to farmers. Farming continues to be an important part of Frederick County, an important factor in maintaining the resiliency of the region.

In addition to using City-owned open space for growing food, some residents have expressed interest in raising livestock in their own yards. In spring 2016, the Mayor and Board of Aldermen adopted Ordinance G-16-11 to allow up to six hens on appropriately-sized City lots.

Successes to Date:

1. *Healthy Eating Active Living*. The City adopted the Healthy Eating Active Living (HEAL) Policy (Resolution Number 15-13), which highlights opportunities to adopt strategies to remedy inequities in access to healthy food for all, establish creative and adaptive use of spaces to allow for additional farmers markets, and to continue to develop and promote community gardens, urban agriculture, and urban farming.
2. *Food forest*. Friends of Waterford Park continue to plant native trees and plants, many of them providing food for wildlife and humans. A variety of species including paw-paws, persimmons, hazelnuts, serviceberries, and others are planted each year, creating a food forest that will benefit everyone.
3. *Summer Food Service Program*. The Frederick Community Action Agency helps fill the nutrition gap for low-income children who depend on free and reduced-price school lunch and breakfast during the school year.

Suggested Policy Changes:

1. *Explore updating the vendors and peddlers regulation to allow mobile farmers markets*. A number of residents have expressed interest in having access to grocery stores, particularly in walking distance. However, no grocers have come forward. A mobile year-round farmers market would enable the residents of underserved neighborhoods access to fresh produce and the market owners to expand their customer base.

Suggested Actions:

1. *Grocery stores*. Explore incentives that might encourage grocers to open in specific areas of the City that currently lack grocery stores.
2. *Food donations*. Encourage local grocers and restaurants to donate usable food to local soup kitchens. Several restaurants in the downtown area already contribute food to soup kitchens, but there are many others that could donate.
3. *Creative food options*. Explore creative options, such as opportunities for mobile food trucks offering fresh vegetables and fruits in areas that lack grocery stores. Mobile food trucks parked for several hours in the evening in some areas could help provide healthier food choices in areas that currently do not have them. A four-month pilot project in Boston served 10 neighborhoods, 1,120 families, and

sold 17,541 pounds of fresh produce and grains from a retrofitted school bus in neighborhoods lacking access to supermarkets and other affordable healthy food outlets.

4. *Farmer's markets.* Explore options for a year-round farmer's market in the City. Year-round farmer's markets in areas that do not have grocery stores could help provide healthier food choices throughout the year. While the Fairgrounds market is open year-round, the selection is limited. There are seven markets in the City of Frederick, operating May through October. If these were expanded for year-round service, they could help provide healthy food choices throughout the year. Several successful year-round markets are located in Baltimore City, Silver Spring, and Takoma Park and can serve as an example for the City's markets.

Food & Nutrition for the Future:

Access to food is an issue that is being addressed in areas slated for new development or redevelopment. The City will focus on creative solutions for those neighborhoods that already are established, particularly in areas that do not have healthy food outlets within walking or bicycling distance.

Potential Partners:

Friends of Waterford Park
NACs

Resources:

City of Frederick. [Resolution No. 15-13: Obesity Prevention—Healthy Eating Active Living](#). 2015. PDF.

City of Frederick. [Ordinance No. G-16-11](#)

Feeding America. [Map the Meal Gap Tool](#). 2014.

[Fresh Truck](#). a mobile fresh food market in Boston, MA.

Hack, Gary, PhD. [Business Performance in Walkable Shopping Areas](#). PDF. 2013.

Maryland Hunger Solutions. [Your Guide to the Summer Food Service Program, 2015 Edition](#).

U.S. Department of Agriculture Economic Research Service. "[Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences](#)." 2009.

Water Quality & Water Supply

The health of Frederick's streams is impacted by lack of riparian buffers, runoff, and air pollutants. Many of the waterways flowing through the City originate or end outside the municipality's boundaries. Ideally, water flowing out of the City would be higher quality than when it flowed in. With a 50-foot minimum required riparian buffer, the City is well on the way to improving the quality of its waterways. However, buffers are lacking on several miles of stream corridor and those areas will be prioritized for planting.

Curbing runoff with innovative best management practices (BMPs) will help treat more stormwater on site and reduce the pollutant load going to the waterways. With a mandated stormwater fee in the City, BMPs should become a focus of new development and redevelopment.

Some of the waterways flowing through the City become drinking source waters for Frederick residents and for other municipalities downstream. The City's water supply currently comes from Linganore and Fishing creeks and Monocacy and Potomac rivers. Currently only providing about 16 percent of the City's water, the Potomac River will eventually provide more than 50 percent of the City's water supply through the Potomac River Water Service Agreement with Frederick County.

The 7,000-acre Frederick City Watershed presents an additional challenge as it provides a portion of the City's water supply and offers significant recreational opportunities. The watershed also is a major connector between Gambrill and Cunningham Falls state parks with more than 50 miles of trails, only 12 of which are sanctioned. The Mayor-appointed Watershed Ad Hoc Committee is addressing the balance of water quality, water supply, and recreation in the watershed. Ultimately, the City Watershed is set aside for preserving water quality and supply for the benefit of City residents and businesses.

To help protect the water supply resources, the City also is part of the Potomac Drinking Water Source Protection Partnership (DWSPP), a formal agreement among jurisdictions whose drinking water source is the Potomac. Each year, the Interstate Commission on the Potomac River Basin's Cooperative Operations for Water Supply on the Potomac (CO-OP) conducts exercises with Potomac water utilities to practice protocols during times of drought and updates a water demand and resource availability report every five years, the most recent of which was produced in 2015. Should drought or disaster impact the region, Frederick will need to have a good handle on how its water supply might be affected.

Successes to Date:

1. *Stream buffers.* The City follows the Maryland minimum 50-foot stream buffer to protect this valuable natural resource. A forested buffer can help shade the stream, provide bank stabilization, and reduce erosion, all of which improve water quality.
2. *Credits.* For residents, businesses, and developers who address stormwater through various environmental site designs (ESDs), the City offers a stormwater

management utility fee credit, dependent upon the impervious area and method of addressing the stormwater. (City Code Section 28-31(e)-(g)).

3. *Watershed Ad Hoc Committee*. This committee was established to help balance the recreational user groups and water quality in the City's Watershed and Municipal Forest, the land protecting a portion of the City's water supply.
4. *Wellhead Protection Overlay*. Wellhead protection is included in the City's Land Management Code "*Environmental Regulations*" Section 743, for the purpose of regulating land use and development in order to protect wellheads and to prevent the contamination of groundwater supplies.
5. *Floodplains*. Over the past 30 years, the City has acquired most of the stream valley floodplains in the development review process for the Shared Use Path System. This not only provides the necessary links for the path system, but also ensures that the stream buffer is not encroached upon.

Suggested Policies:

1. *Adopt an updated Recreation Component within the existing Forest Stewardship Plan to address recreation issues in the City's Municipal Forest and Watershed*. This plan will help balance the need for water quality and supply protection and recreation in the City's Fishing Creek Reservoir and its watershed. The Mayor's Watershed Ad Hoc Committee, a group of recreation stakeholders, is working on this plan.
2. *Adopt a Watershed Management Plan to address impervious areas in Tuscarora, Little Tuscarora, Rock, and Carroll creek watersheds*. This plan will help the City determine which impervious areas should be prioritized to provide the best treatment with the limited funding available.

Suggested Actions:

1. *Riparian planting*. Prioritize riparian areas for tree planting efforts. About 52 acres have been planted in riparian areas in the last few years. However, there many other riparian areas that could be planted. This will help protect water quality and provide enhanced green corridors for wildlife.
2. *Water conservation*. Educate City residents and businesses about water conservation. Providing the City's residents and businesses with clean water is costly. Maintaining the highest water quality possible in each of the City's water sources will help keep costs lower, but there always will be a cost to provide clean water for the population. There are plenty of opportunities for water users to conserve, which will not only save money, but also help preserve the resource.
3. *Monocacy Scenic River Overlay*. Explore a Monocacy Scenic River Overlay that might address new development and redevelopment in the ecologically sensitive Monocacy corridor. An overlay might help improve water quality and

maintain water supply while balancing recreation, development, and scenic character of the River corridor.

4. *Water resource protection.* Continue to work with Maryland Department of Natural Resources Forest Service and recreational users to protect water supply and quality in the City Municipal Forest and Watershed in balance with valuable recreation opportunities to the public.
5. *Beyond one inch.* Explore incentives for developers to capture beyond the required one inch of stormwater. The first inch of stormwater can be the most polluted runoff as fertilizers, oils, and other chemicals are washed from impervious surfaces. However, runoff beyond the first inch also should be captured the greatest extent possible to take advantage of soil's natural filtration and plant uptake. As stormwater filters through soil it recharges groundwater, which becomes baseflow for streams and rivers. During summer droughts, this baseflow enables those streams and rivers to still flow, providing enough water for aquatic plants and animals and the ecosystems in which they are included to thrive.
6. *Homeowner incentives.* Explore incentives for property owners to reduce existing impervious areas or install BMPs to help reduce stormwater runoff in existing urban areas. Private property owners often are not aware of how runoff from rooftops, driveways, and even lawn can impact water quality. Exploring ways for private property owners to reduce impervious surfaces, even in small amounts, could add up to significant improvements in water quality.
7. *Pesticides.* Reduce the use of pesticides on City-owned property. By exploring alternative landscapes that do not require as much maintenance, the City could reduce its need to use pesticides in many areas.
8. *Invasive species.* Continue to monitor and manage the City Municipal Forest and Watershed as well as City-owned parks and other land for invasive species and pests.

Water Supply & Water Quality For the Future:

As the City grows, understanding the adaptability of the City's water supply to climate change will be critical. Currently, the City's water supply comes from four sources, but the Potomac River will provide up to about 50 percent of the City's water in the future. The City should better understand that resource and how it could be impacted with changes in the overall Potomac watershed, such as growth in other municipalities drawing from the river, potential loss of forest from development pressure in the western reaches of the watershed, or potential changes in policies on the allowance of hydraulic fracturing in the state. Because most of the City's water supply comes from sources outside the municipal boundaries, it will be critical to build resiliency and adaptability into the system in anticipation of unknown large-scale issues that could impact supplies.

Potential Partners:

Maryland Department of Natural Resources Forest Service

International Mountain Biking Association—Mid-Atlantic Off Road Enthusiasts (IMBA-MORE)

Potomac Appalachian Trail Council (PATC)

Resources:

City of Frederick. "[City of Frederick Annual Drinking Water Quality Report.](#)" 2013. PDF.

Interstate Commission on the Potomac River Basin Section for Cooperative Water Supply Operations on the Potomac. "[2015 Washington Metropolitan Area Water Supply Study: Demand and Resource Availability Forecast for the Year 2040.](#)" 2015. PDF.

Air Quality

Air quality fluctuates as emissions from vehicles, industry, and power plants increase or decrease. Exposure to elevated levels of airborne pollutants can cause and aggravate a range of lung and respiratory ailments including allergies, emphysema, pneumonia, and chronic bronchitis. It also is a risk factor for cardio vascular problems such as heart attacks, strokes, heart failure, and irregular heartbeats.

The four key pollutants the Environmental Protection Agency (EPA) regulates are nitrogen dioxide, volatile organic compounds (ozone season), nitrogen oxide, particulate matter (PM2.5 direct), and wintertime carbon monoxide, and all are expected to “Remain below approved regional limits.” A sharp decline in these pollutant levels is expected through 2020 and then a steady decline through 2030.

It should be noted that carbon dioxide, a greenhouse gas, is not regulated through federal law. The Transportation Planning Board began estimating future carbon dioxide emissions through the CLRP because of the pollutant’s contribution to global climate change. According to the CLRP, absolute carbon dioxide equivalent emissions will decrease in the region by 22 percent by 2040 and per capita carbon dioxide equivalent emissions will decrease by 44 percent.

One of the main causes of air pollution is from vehicle emissions. According to the National Capital Region Transportation Planning Board’s 2015 Amendment of the Financially Constrained Long Range Transportation Plan (CLRP) for the National Capital Region, “Emissions of all key pollutants are expected to drop steadily due to tougher fuel and vehicle efficiency standards and projected changes in land-use and the transportation network.”

The CLRP stated that “by 2040, the region’s transportation system is expected to handle 4 million more trips, an increase of 23 percent.” Further, the report stated that “growth in carpooling, transit, walking, and bicycling is expected to outpace growth in single occupancy driver trips, for all trips and work trips alike.” Though each mode of transit will increase the number of trips by 2040, there will be a declining trend in single-driver work and non-work trips and a slight increasing trend in work trips commuted by carpooling, transit, walking, and bicycling.

During summer months, the region rates poorer air quality as Code Red, Orange, or Yellow days, if there is an exceedance of ground level ozone levels, which happens on particularly hot days. There were no Code Red days, the worst air quality rating, in Frederick County in the past ten years.

Continuing to encourage alternative modes of transportation, providing safe bicycle and pedestrian corridors, building infrastructure for electric vehicles, and increasing the urban tree canopy will help reduce emissions on a local scale.

Successes to Date:

1. *Regional air quality.* The City is one of many member jurisdictions participating in the Metropolitan Washington Council of Governments (MWCOG), a regional coordinator for policy and action in air quality improvements. The City has one of several ozone monitors at its airport to help the region determine real-time

outdoor air quality. Regional air quality reports are available on the MWCOG website.

2. *Bikes for employees.* Five retired police bicycles were offered to all departments for employee use to travel to meetings and conduct site visits when appropriate. This action will enable employees to reduce vehicle miles traveled by car and the overall carbon footprint.
3. *Bike to Work Day.* Participation in Bike to Work Day continues to increase each year. The mayors of Rockville and Frederick initiated a challenge to increase ridership by the biggest percentage in 2015. Frederick saw a 45 percent increase in registrants compared to the 4.3 percent increase in registrants for Rockville. The total number of riders for Frederick was 404 in 2015.
4. *Complete Streets Policy.* This policy not only will help provide safe transportation for all users, but it also will help encourage the use of alternative transportation. Fewer vehicle trips will help reduce emissions and particulate matter.

Suggested Policies:

1. *Adopt a Petroleum Reduction Policy.* This policy not only will help reduce the City's overall carbon footprint and costs, but it also will help improve air quality by reducing emissions from burning fossil fuels. University of Maryland Partnership for Action Learning in Sustainability (PALS) students creating a greenhouse gas inventory for City-owned buildings, transportation, and sources of non-combustion compared a light-duty hybrid vehicle versus a conventional gasoline-powered light-duty vehicle. The students noted that the cost benefit ratio of the CO₂ emissions reductions coupled with the fuel savings was nearly four times more for the hybrid than that of the conventional vehicle. Converting the City's light-duty fleet to hybrid and electric vehicles will allow the City of Frederick to lead by example and continue the already-recognized air quality improvements over the last few years.

Suggested Actions:

1. *Tree planting.* Prioritize tree planting throughout the City. Trees provide many benefits including capturing particulate pollution, cooling the air, and providing oxygen.
2. *Carbon footprint reduction.* Determine the expected effects of urban heat island and climate change on the City. Using data collected by PALS students studying climate change in the watershed and municipality, the City has the opportunity to proactively manage effects of the urban heat island and proactively plan for situations that could occur.
3. *Alternative transportation.* Encourage City employees to utilize alternative modes of transportation for their commutes. Explore options such as

incentivizing walking and biking by giving employees half of the parking deck fee if they choose not to have a parking card. According to a study by PALS students, 43 percent of City staff commuted fewer than six miles round-trip in 2013. That commuter group could be encouraged to find alternative transportation methods, such as bicycling. This action alone could reduce emissions from commuting by 14 percent. Other opportunities such as carpooling also could reduce emissions from single-occupant vehicles.

Air Quality For the Future:

The City continues to reduce its energy needs and carbon footprint, increase its urban tree canopy and green spaces, and improve its water quality. An intangible asset, air should be considered in any plans alongside water, landscaping, structures, and transportation corridors. The direction of airflow and how it could impact urban heat island, how pollution settles, and how the City itself could change wind patterns should all be important considerations in planning.

As the urban tree canopy and green spaces increase within the City, temperature shifts related to the urban heat island effect should be somewhat moderated. With a focus on Complete Streets, the City can encourage alternate transportation and lower its emissions and particulate matter from burning fossil fuels in vehicles. Continuing the downward trend of Code Red and Orange days is positive and shows promise for continued improvement in the area.

Further, in its 2010 report *What Would It Take? Transportation and Climate Change in the National Capital Region* the Metropolitan Washington Council of Governments (MWCOG) stated the region's carbon dioxide (CO₂) reduction goals for 2020 to be 20 percent of 2005 levels and by 2030 to be 40 percent below 2005 levels. The MWCOG expressed that there would need to be reductions in all sectors to reach this goal. The report notes that "the enormity of the transportation sector's emissions contribution will mean that at the very least, some reductions will need to come from this sector." The report further explains that while heavy duty vehicles will remain 10 percent of the vehicle miles traveled (VMT), they will account for about 30 percent of CO₂ emissions by 2030. Light duty vehicles currently account for about 90 percent of the VMT, but currently only account for about 80 percent of the emissions because of fuel economy standards.

The City should explore opportunities to help reduce the impact of heavy duty vehicle emissions, such as the potential to shift from diesel to natural gas over the next decade, and light duty vehicle emissions by shifting to electric and hybrid vehicles.

Potential Partners:

MWCOG

Resources:

Allen, Tanya, et al. [City of Frederick Carbon Footprint and Energy Profile: A Local Government Greenhouse Gas \(GHG\) Emissions Inventory](#). Fall 2015.

Frederick County Office of Sustainability. Frederick County Sustainability Progress Indicators presentation. 2014.

Maryland Department of the Environment. (2014). [Historical Air Quality Data](#).

National Capital Region Transportation Planning Board. [CLRP 2015 Amendment: Financially Constrained Long Range Transportation Plan for the National Capital Region](#). 2015.

Pope III, C. Arden and Douglas W. Dockery. (2006). [Health Effects of Fine Particulate Air Pollution: Lines that Connect](#). Journal of Air & Waste Management Association, vol. 56(6), 709-742.
<http://www.tandfonline.com/doi/pdf/10.1080/10473289.2006.10464485>

Sustainability for the City of Frederick

The City already is well on the way toward sustainability, but this Plan outlines policy changes and actions that could help meet existing challenges and establish Frederick as a sustainable leader.

While it is impossible to know what will happen in the future, understanding and embracing the possibilities is important. Models can help show potential future issues, such as those for water supply, one of the most critical resources for the City. Where feasible, the City should work to be more resilient and adaptable to a range of resource changes that could impact residents and businesses.

Efforts to make progress on or complete the suggested policy changes and actions in this plan will be ongoing. A progress report including accomplished goals, action items, and policy changes, as well as any updates will be presented annually to the Mayor and Board of Aldermen.