

# CITY OF FREDERICK 2018 SUSTAINABILITY ANNUAL REPORT HIGHLIGHTS

Balancing the economic, social, and ecological needs of the City's residents and businesses for today and future generations.

## ENERGY



Despite a 7% increase in population since 2013 and increased facilities to accommodate new residents, electricity use in City facilities has only increased by .5%. In 2013, about 44% of the City's electricity use was for water facilities. In 2018, about 46.5% was used for water facilities. Though the cogeneration system at the wastewater treatment plant lowers electricity use from the grid, Enhanced Nutrient Removal (ENR) upgrades have increased the electricity demand at the plant.

Streetlights continue to use about 25% of the electricity usage in 2013 and 2018. Many street lights have been upgraded to LED, which can account for a stagnant electricity use despite the increase in street lighting.

Occupied buildings accounted for 18% of the use in 2013 and 2018. Where practical, HVAC and lighting will continue to be upgraded to the latest technology to reduce energy use.

Unconditioned spaces, such as park pavilions and fields accounted for about 13% of the energy usage in 2013. Energy usage of these spaces has fallen to about 10.5% of the total because of LED lighting.

The most significant accomplishment for 2018 was to purchase renewable energy credits (RECs) for 100% of the electricity used at City facilities beginning in December 2020.

## WASTE & RECYCLING



The City relies on Frederick County to provide recycling services and landfill services. The County's landfill is at capacity and serves as a transfer station to haul waste to a facility in Pennsylvania. The City is the County's largest waste customer, producing about 27% of the overall waste that is trucked to the transfer station.

Recycling throughout the country has seen a major shift because overseas buyers will no longer purchase contaminated recycling. Containers with food or other residue, trash in the recycling bins, and non-recyclable items can quickly spoil an entire load of recyclables. The County is working on a new contract and is expected to announce changes in mid-2019.

The City has offered compost bins to residents at a reduced cost of \$20 for the past two years, however, not many residents have taken advantage of the program. Compost is the heaviest part of the waste stream and could be diverted to reduce about 30% of all waste going to the landfill.

In light of changes in recycling and lack of landfill space, the City's residents and businesses have an opportunity to make decisions about how waste is diverted and to reduce the amount of waste produced.

## CANOPY & FOOD



Volunteers and staff planted 662 trees in public spaces around the City in 2018. More than 100 of those trees were planted as part of a food forest in Baker and Waterford Parks that is accessible via the shared-use path.

The City has 72 community garden plots available to residents for a small fee. While some plots in Westside Regional Park were unavailable in 2018, those plots will be available after the Butterfly Lane realignment is complete.

Frederick was designated as a Platinum Level Healthy Eating Active Living (HEAL) City in June 2018, signifying the City's leadership for its efforts in providing alternative transportation routes, workplace wellness, and ongoing efforts to provide healthy food sources for all residents.

## TRANSPORTATION



There is increasing interest in alternative transportation within the City. Critical links in the shared-use path, bike lanes, sidewalks, and mass transit continue to improve the network each year.

The City has installed 14.09 miles of on-road bike facilities, with 51.78 planned. Green-painted bike lanes were installed on North Market Street. In 2018, repairs and upgrades were made to the existing 12.58 miles of shared-use path, including the section from Culler Lake to Fairview Avenue in Baker Park.

Crosswalks and curb cuts for ADA access have been improved at 59 locations throughout the City in 2018 making those areas safer and easier to access for all.

TransIT, which serves the City and County, reports a decrease in ridership that follows national trends, but about 85% of the ridership activity occurs within the City.

## WATER



Volunteers collected 12,890 pounds of trash from the City's Watershed, Rock Creek, and Carroll Creek during spring and summer cleanups in 2018. These cleanup efforts help reduce the amount of trash that travels downstream to the Monocacy and Potomac Rivers and improves habitat for fish, macroinvertebrates, birds, and other animals.

Stream restoration planning is beginning for Carroll Creek near its confluence with the Monocacy River and for a portion of Little Tuscarora Creek in Clover Ridge Park land.

The City is conducting a flood study with the assistance of the Army Corps of Engineers to evaluate stormwater and flooding issues in the Motter Avenue, Monocacy Village Park, East Street to 14th Street, and 7th Street Shopping Center and portions of College Estates Subdivision. Results of the study are expected in 2019.

The City continues to manage the Watershed, a 7500-acre forested tract protecting the only water supply the City owns. The headwaters of Fishing and Tuscarora creeks are in the Watershed, along with 22 threatened and endangered species. The City's three other water supplies are located in the County.

## IMPERVIOUS SURFACES



To date, about 50 street tree pits in the downtown area have been refurbished with flexible pavement to allow stormwater to flow through and reduce soil compaction around the roots.

The High Performance Buildings Tax Credit for LEED and LEED-equivalent buildings has been applied to 22 individual addresses to date.

## AIR



Air quality is dependent on tree canopy, pollutants from industry in the area and outside the area, temperature, and other factors.

There is an increase of summer daytime temperatures of 3.9F in the City compared to its rural surrounds, indicating that the City is an urban heat island. Other data shows a two-degree annual temperature increase for the region with an increasing trend.

Tree canopy is one way to help reduce the impacts of urban heat island and filter particulates from the air.

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## CLEANUP HUB



The City of Frederick Sustainability Department and Frederick County Office of Sustainability and Environmental Resources will partner in spring 2019 to facilitate stream cleanups in the area. The Potomac Watershed Cleanup will deliver supplies to City and County offices for all registered sites because of the increased participation in stream cleanups.

## SAVE THE FISH



Through stream restorations, the City has an opportunity to help preserve a genetically distinct brook trout population in Little Tuscarora Creek. This means they are found nowhere else in the world. The City is partnering with the County to restore as much of the creek as possible and find ways to lower water temperature from existing stormwater facilities. Similarly, restoration in Rock and Carroll Creeks will help preserve populations of the state-threatened pearl dace and highly rare checkered sculpin.

## ENR



The City's wastewater treatment plant was upgraded in 2018 with enhanced nutrient removal (ENR) technology to reduce the amount of nitrogen and phosphorus entering the waterway.

These reductions will help improve the health of Monocacy and Potomac rivers and the Chesapeake Bay by reducing the nutrients that can cause harmful algae blooms.



## FLEET

The City's fleet includes 6 hybrid sedans and 1 plug-in hybrid vehicle. City police are requesting funding for 20 hybrid utility vehicles to replace aging fleet vehicles in FY20.



Volunteers register cleanup sites through the Potomac Watershed Cleanup. 5 sites are registered on City sites with an average of 1,796 bags of trash collected each year. Site leaders request permission for access to the stream and to stage trash at a pre-determined location, advertise their event, register for supplies, and lead the cleanup operation.



## 1,712 TONS

The City's residents and businesses average 1,712 tons of trash each month, an increase of 4% from 2016 and 12% from 2014.



## COGENERATION

The cogeneration facility at the WWTP helps offset the energy used at the plant and offsets about 4% of the City's overall energy usage. The cogen facility saves an average of \$5,730 per month.

## CLEAN WATER

## 1,796 BAGS

There are 12 additional cleanup sites throughout Frederick County, all to protect local streams and rivers. Volunteers remove thousands of pounds of trash every year from local waterways.



## COMPOST BINS

More than 100 compost bins have been deployed at private residences around the City. The bins help keep vermin out and heat the heap. It is estimated that hundreds of pounds of compost has been kept out of landfill.

## ENERGY AUDITS

An ASHRAE Level II audit was conducted on the William Talley Recreation Center, which resulted in potential upgrades to reduce energy use and lower the building's carbon footprint. The Sustainability Department hopes to conduct Level II audits on the Municipal Annex and the DPW facilities on Airport Drive in FY20. These audits will provide a punch list of upgrades to help reduce energy use and lower the carbon footprint of those buildings.

## 100% RENEWABLE

The City will purchase renewable energy credits to offset 100% of its electricity use beginning December 2020. This will exceed the goal of 20% renewables by 2022.



## EVs

Engineering, Planning, Permits, and Sustainability staff are working on developing electric vehicle (EV) infrastructure language to incorporate into the land management code and a new ordinance. This will better prepare our City for installing public and private EV charging stations.

## FLOODPLAIN

Sustainability and Engineering departments worked to redline the Floodplain Ordinance with a definition for riparian buffers and establish zones for allowed activity. This will improve water quality, help reduce erosion, and create more habitat. This is a legislative priority for FY19.



## 77,000 BUTTS



Through a collaboration with Downtown Frederick Partnership, NAC 11, and the Sustainability Committee, about 30 Terracycle cigarette butt recycling containers were installed downtown. Nearly 55 pounds of butts have been recycled to date. Preliminary data indicates that the butt containers are being used, but the containers have only been installed for a few months. The City's AV Dept. has created a PSA about cigarette butts and the new containers.

## LMC SEC 605



Sustainability and Planning departments worked to redline the Landscaping section of the Land Management Code to include updates to the Forest Conservation language, as well as other changes to balance canopy and green spaces with development. This is a legislative priority for FY19.

## 12,890 LBS

Volunteers collected 12,890 pounds of trash from the Watershed, Rock Creek and Carroll Creek during spring and summer cleanups in 2018.



## LIGHT UP

To date, street lights have been upgraded to LEDs on 34 street segments and 3 entire neighborhoods, with more planned each year. Grants from Maryland Smart Energy Communities (MSEC) have funded the upgrades to more than 250 of those lights. The City has applied for funding to upgrade an additional 176 street lights in FY20. Depending on existing fixture wattage, upgrades could mean a difference of 377 to 970 kWh per year per fixture.



## MASS TRANSIT



About 85% of all TransIT's Connector Route ridership activity occurs within the City of Frederick. In FY18, Connector Routes provided more than 520,000 passenger trips, or about 1,840 passenger trips each weekday, and about 1,000 passenger trips on Saturdays. The MARC Train Station/Transit Center on East Street is the most active location where about 1,400 passengers are boarding or arriving each day.

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## WALKABLE & BIKEABLE



The City has installed 14.09 on-road bike miles, including the bike lanes on North Market Street, with 51.78 planned. Repairs and upgrades to the existing 12.58 miles of shared-use path have been a focus in 2018, including the section from Culler Lake to Fairview Ave., in Baker Park. There are 27.4 miles planned between the City and County.



## 1,157 HOURS



Volunteers donated 1,157 hours in 2018 to plant trees, pick up trash, pull invasive plants, and help with other sustainability-related tasks.

Friends of Waterford Park, Friends of Baker Park, Rotary Club of Carroll Creek, Boy Scouts, Hood College HEAT, Stream-Link, Mid-Atlantic Off-Road Enthusiasts, and other groups helped organize these events.

## 5 EVENTS



The Sustainability Department and Sustainability Committee attended and/or led 5 events, including 3 focused on tree canopy. The Committee tabled in The Street and the Green Neighbor Festival.

The Sustainability Committee is partnering with the Middletown Green Team, the Frederick County Sustainability Commission, and Frederick County Public Library to plan a monthly lecture series in 2019.

## 59

There have been more than 59 upgrades to ADA intersections and crosswalks this year as part of street, water, and traffic signal upgrades, in addition to specific sidewalk retrofits and ADA intersection and corridor improvement projects.



## 662 TREES



In addition to Forest Conservation Act efforts and scheduled street tree plantings, 662 trees were planted in parks and the Watershed by volunteers and Sustainability staff in 2018.

## TREE PITS



50 street tree pits have been upgraded with flexible pavement in the downtown area. This pavement supports continued tree growth by stretching around the roots and allowing water to soak through to the roots.



## 1,521 LBS DONATED



The Food Security Network produced and donated 1,521 pounds of produce to approximately 400 families in 2018. 182 volunteers donated 1,397 hours to the project. The Food Security Network focuses on City residents. The City Sustainability Department will partner with the Network in 2019 to help more families in need.

## FOOD ACCESS



The City's Sustainability Department is part of the Frederick County Food Council, a new group that hopes to address food education, the economics of food and local farms, food equity, and access to food.

The City will partner with the Food Security Network, another group focused on providing City residents with fresh, hyper-local food.

There are opportunities to increase community gardens and food forests on private land and in public spaces. The City and its partners, Friends of Baker and Waterford Parks, planted an acre of food forest in 2018. The City also currently provides space for 72 community garden plots in Westside Regional and Willowbrook Parks.

Stormwater is able to move through the pavement pores to the soil below where it can be filtered and used by the tree. The pavement also reduces soil compaction, which will maintain good air and water pore spaces for root growth.

Flexible pavement enlarges the usable sidewalk space allows for multimodal traffic without hindering wheelchair and stroller movement and reduces tripping hazards.



## FLOOD STUDY

The US Army Corps of Engineers is evaluating the stormwater and flooding issues in the Mottter Avenue, Monocacy Village Park, East Street to 14th Street, and 7th Street Shopping Center and portions of College Estates Subdivision. The study will include a field survey of the existing stormwater system, stormwater modeling, and development of alternatives to reduce stormwater flood risk. Ultimately, the study will identify areas that lack sufficient infrastructure, those likely to suffer catastrophic losses from a 100-year storm event, and opportunities to minimize those impacts.



## TREES FOR RESIDENTS

According to the 2016 Tree Canopy Assessment Report, the City's canopy is about 20%. The report notes that most of the existing canopy and potential canopy is in residential areas. With a goal of 40% by 2030, the City will need to invest in homeowner education and cost-share to increase canopy in those areas.

The proposed cost-share program for FY20 could provide funding for about 200-400 trees, depending on size. If the project works in FY20, it could be expanded to plant more canopy in the following years.

## ELECTRICITY USE



To provide for the City's 7% increase in population, new street lights, stop lights, and other equipment were installed to meet the demands. However, since 2013, electricity use at City facilities has only risen by .5%.

Street light upgrades to LED technology, cogeneration at the wastewater treatment plant, and updating lighting and HVAC units in buildings are part of the success in lowering energy use.

## GHGs

According to the Metropolitan Washington Council of Government's Greenhouse Gas Assessment, the City's emissions decreased by 8% despite a 12% increase in population from 2005. Energy efficiency measures and cleaner fuel sources contributed to the GHG reductions.

The assessment included residential, commercial, and municipal users in the calculations. The reduction indicates that our collective initiatives are working to decrease our carbon footprint.



## URBAN HEAT ISLAND

According to a Yale School of Forestry study, there is an increase of summer daytime temperatures by 3.9F in the City compared to its rural surrounds, indicating that the City is an urban heat island. Other data shows a two-degree annual temperature increase for the region with an increasing trend.

This temperature difference will lead to increased use of air conditioning and bigger carbon footprint. Those residents who may not have access to air conditioned spaces will be exposed to extreme heat in the near future and heat-related illnesses will impact these populations. One way to reduce the affects of the urban heat island is increasing tree canopy, which can directly block sunlight and also cool the air through transpiration.