



Climate & Resilience

Community Preparedness

Energy

Greenhouse Gas Emissions

Clean Air

Food Systems









climate & resilience: Community Preparedness

Neighborhoods and people prepared to withstand and recover quickly from extreme weather and other emergencies.



THE BIG PICTURE

Natural hazards and extreme weather events are unavoidable. And in the coming years, these kinds of disasters—already markedly stronger and more frequent—are projected to increase in severity because of climate change. It is critical for cities to become more resilient to these events. This means strengthening buildings, utilities, and emergency response systems, as well as by fortifying social systems and resident safety nets, so everyone is able to recover quickly.



- Resident of Cheswolde who has lived in her neighborhood for more than a decade, responding to the question "How can YOU make your neightborhood better?"



IN BALTIMORE

Ensuring government and Baltimore residents are prepared for emergencies and disasters.

Baltimore is highly vulnerable to coastal storms, flooding, extreme heat, high winds, and winter storms. Combined with a projected rise in sea level, these hazards will continue to reach more parts of our city than they have in the past. Natural hazards cause property and economic damage, and threaten Baltimore's city-wide utilities, transportation systems, and sewage treatment plants; they also endanger public safety. These hazards have the potential to cause the most strain for low-income residents,

who have fewer resources and face greater barriers to safety, adequate medical aid, and economic recovery after a storm. Baltimore has taken steps to integrate equity into all-hazards mitigation and climate adaptation planning and implementation to support our most vulnerable residents.

The City's Emergency Operations Plan documents how the City will respond to and recover from emergencies and disasters. Baltimore has also taken

Maryland has seen sea levels increases at the rate of about 1 inch every 7 to 8 years, according to the 2018 DP3.

steps to address existing and future impacts of climate change, and the 2018 Disaster Preparedness and Planning Project (known as the "2018 DP3") lays out a detailed approach to adapting to climate change and preparing for natural hazards.

The City has campaigns encouraging households to stock emergency preparedness plans and kits, and it also distributes preparedness materials. Community-based resiliency hubs are being supported throughout the city, and the Mayor's Office of Emergency Management trains resident teams in skills such as CPR, search and rescue, and using NARCAN to reverse opioid overdoses. In all of its work, the Office of Emergency Management pays particular attention to the elderly, the impoverished, those with mobility issues, and those who are differently-abled and require accessibility services.

STRATEGIES & ACTION

1. Review regulatory codes and implement collaborative programs to protect vulnerable residents, such as in neighborhoods with high percentages of seniors, low-income residents, and non-English-speaking immigrants.

Action 1:

Enhance City floodplain regulations and building codes to increase standards for buildings and safeguard against flood events projected to be higher than historic levels.

Action 2:

Update Capital Improvement Process, integrating proactive initiatives based on climate data and social vulnerability, into the process (as well as into other City and community plans).

Action 3:

Streamline the permitting process for buildings designed to higher standards for flood, sea level rise, and/or wind hazards; provide financial assistance to disadvantaged residents for home retrofits to meet these standards.

Action 4:

Upgrade infrastructure to minimize threat to our most vulnerable communities. Identify utility, facility, and infrastructure components for priority upgrades through a community-driven process to reduce vulnerability to flooding, sea level rise, and wind damage.

2. Develop plans and systems to increase community resilience.

Action 1:

Develop a post-disaster plan to guide long-term recovery efforts following a disaster and to ensure those with the least resources are prioritized.

Action 2:

Apply an equity lens to all-hazards mitigation and climate adaptation planning and implementation. Include a new assessment of the risk of man-made hazards, including that of hazardous material releases on roads and railways.

Action 3:

Finalize flood alert system upgrade, ensuring that warnings are translated or interpreted and reach the most vulnerable communities in a timely manner.

3. Increase community awareness of natural hazards and climate change.

Action 1:

1: Continue to host workshops on "community preparedness," inviting residents to collaborate and organize preparation strategies for natural hazards. To foster inclusive and accessible engagement, host workshops at locations where people gather, such as stores, day-care centers, or pop-ups; also translate materials into safe harbor languages.

Action 2:

Continue to support the growth of "community resiliency hubs" in disinvested, high-impact areas to provide protection and resources for residents during excessive heat, hurricanes, other extreme weather events, and local emergencies.

Action 3:

Develop "community resiliency plans" in areas where risks and economic and health vulnerabilities are highest.

Action 4:

Increase the number of residents receiving community preparedness training in low-resourced neighborhoods.





how we'll measure success:



Number and distribution of community resiliency hubs



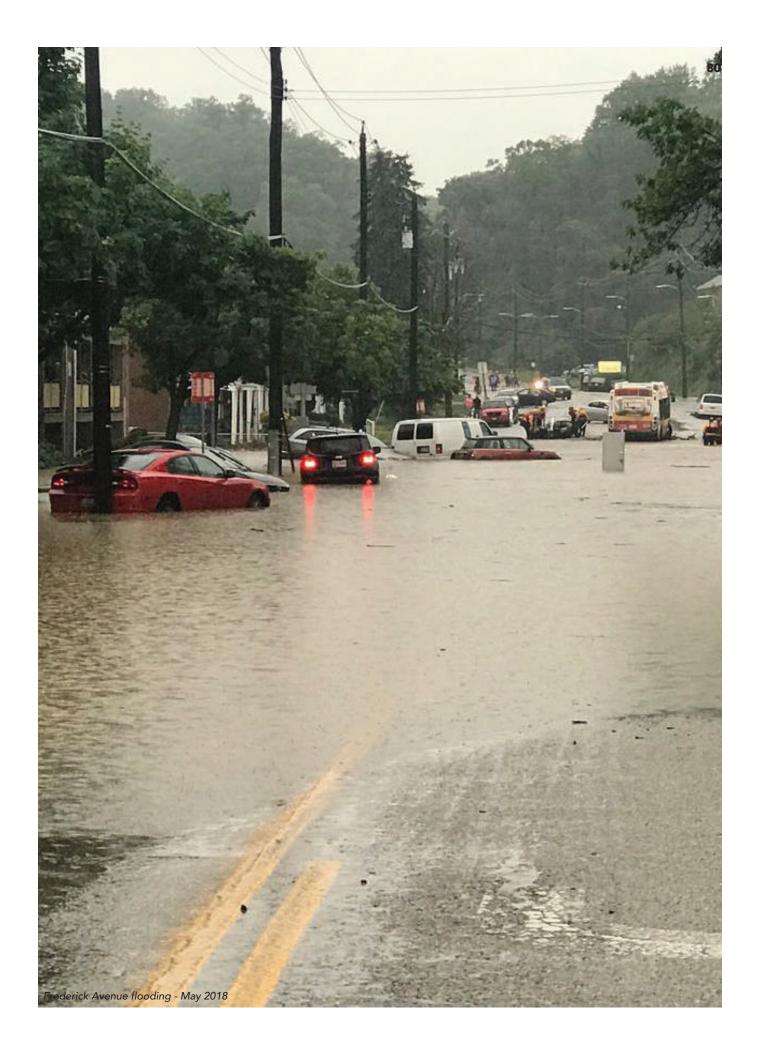
Number and distribution of residents who receive disaster preparedness training



Number and distribution of homes, businesses, and critical infrastructure in high risk areas that are at or above code standards



Number and distribution of repetitive loss properties









climate & resilience: **Energy**

A future where clean, reliable, affordable energy fuels all of Baltimore.



THE BIG PICTURE

The energy that powers our lights, heats our homes, and fuels our transportation comes almost exclusively from fossil fuels such as coal, oil, and natural gas. When we use less energy, we burn less fossil fuels, leading to lower emissions of carbon dioxide which is the primary contributor to climate change. Investments in energy efficiency, renewable energy and alternative fuels save money long-term, catalyze local reinvestment and jobs, and protect human health and the environment. To ensure low-income residents are not left behind as technology advances, cities are working to lower the upfront cost of renewable energy and energy efficiency, expanding car-sharing options, and increasing charging stations in high-poverty areas so residents might capitalize on cost-saving benefits of electric vehicles.

I managed to save about 40 to 50 dollars on that first bill and that first bill came in the dead of winter.... I achieved that goal by making simple behavior changes on how I saved energy.

- Resident of Westport



IN BALTIMORE

Collaborative efforts can continue expanding and supporting green power options that benefit all in Baltimore.

Baltimore has the greatest needs, costs, and challenges in Maryland in terms of serving the energy needs of low-income residents. High energy costs are a burden on cash-strapped families and older adults, who are juggling tough choices between energy bills and basic necessities like food, shelter, or medicine. Additionally, older, unmaintained housing is often leaky and less energy efficient, leading to higher energy bills. Improving the energy efficiency of housing stock is not only a cost-effective intervention, but also delivers valuable benefits to support an equitable clean energy economy by making homes comfortable and healthy and boosting grid reliability.

The good news is that Baltimore has become a leader in advancing energy efficiency, conservation, and renewable energy particularly for low-income residents. The three-year, \$52 million Baltimore Energy Initiative helped lower the utility bills of low-income residents, small businesses, and nonprofits who serve the poor. The Baltimore Energy Challenge has assisted tens of thousands of mostly low-income residents to reduce energy consumption and costs using peer-to-peer engagement. The Empower Maryland program has allowed utilities to add customer surcharges to be spent on programs

During the winter of 2017, Baltimore's power utility reported a 25 percent decrease in the average customer electric bills, due in part to energy efficiency programs.

that reduce energy consumption and waste for residential and business consumers including efficient appliances, home energy checkups, rebates and bill credits for reducing electricity usage in Baltimore City and throughout the state. The city adopted the International Green Construction Code and the green building code to create stricter standards for non- residential buildings. On the transportation side, electric vehicle charging stations have been installed in public parking garages and on the street.1



STRATEGIES & ACTION

1. Expand awareness of and funding models for energy efficiency and renewable energy.

Action 1:

Expand energy efficiency, conservation and renewable energy education programming to reach homeowners and renters with a specific focus on low-income populations; expand energy education programs in schools, businesses, local organizations, colleges and government.

Action 2:

Seek increased financing for energy programs including home efficiency and improvement programs, energy assistance, and weatherization, solar, battery storage, microgrids, and alternative vehicles; explore ways for low-income residents, community groups and others to become investors and participate in revenues generated by community solar projects.

Action 3:

Expand solar job training programs and job placement opportunities to train and employ the unemployed and underemployed; require that city government renewable energy projects either use trainees in these programs or hire program graduates.

2. Speed the path to decarbonization through increased deployment of renewable energy and electric vehicles.

Action 1:

Increase the supply of clean, renewable electricity and battery storage, including community solar and rooftop solar opportunities for low-income homeowners and renters, and tie to building improvements.

Action 2:

Advocate for a higher State of Maryland renewable portfolio standard (RPS) as well as affordable pathways to electrification.

Action 3:

Increase electric vehicle adoption through awareness campaigns to promote the climate and air quality benefits of electric vehicle ownership and publicize the locations of publicly-accessible charging stations.

Action 4:

Adopt a goal for electric vehicle charging stations; provide neighborhood and business district charging stations and implement electric vehicle, car-sharing pilots in low-income neighborhoods and neighborhoods most burdened by air pollution.

3. Support and deploy innovative technologies and programs to reduce energy use in buildings and transportation.

Action 1:

Review current building codes and regulations, and adopt a residential green building code to increase energy efficiency in residential buildings.

Action 2:

Complete the conversion of streetlights to LEDs and pilot streetlights with solar panels, temperature monitoring and sensors that can spot parking spaces and track air pollution. Ensure equitable geographic distribution.

Action 3:

Increase installation of cool roofs and green roofs and plant more shade trees in neighborhoods where concrete and other hard surfaces trap and collect heat, creating "urban heat islands".

Action 4:

Promote and expand installation of energy-efficient combined heat and power and district energy systems which capture and reuse waste heat.

Action 4:

Set a goal to reduce petroleum consumption and increase use of alternative fuel vehicles and equipment in the city government fleet.

how we'll measure success:



Number and distribution of homes retrofitted through community energy and assistance programs



Number and distribution of solar installations



Number of jobseekers that have been trained in solar installation and other 'green' job skills and that have been successfully hired for green or sustainable jobs

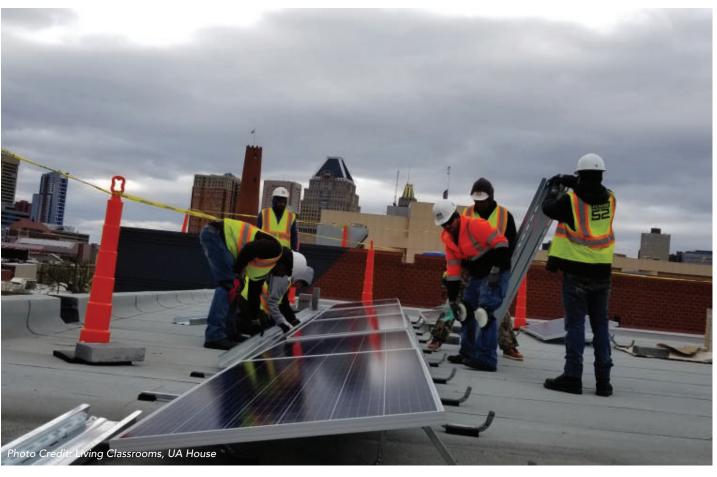


Average percentage of household income spent on energy



Total electricity and natural gas consumption per capita (city-wide as well as specific to city government)











climate & resilience:

Greenhouse Gas Emissions

Reducing our city's contribution to the global drivers of climate change.



THE BIG PICTURE

When humans burn fossil fuels—such as coal, gasoline, and natural gas—we emit "greenhouse gases," which are so-called because they change the makeup of the earth's atmosphere to trap more heat (as a greenhouse does). These emissions are increasing the average temperature of the globe, contributing to rising sea levels, and changing our very climate. These changes are happening now, and in the future are expected to create even greater risks such as flooding, storm surges and wildfires, as well as disrupted food production and displaced populations. Importantly, these risks will fall hardest on people who are more economically insecure, and on communities of color. For the health of the planet and human population, every city and jurisdiction has a responsibility to limit its contribution to greenhouse gas emissions.



IN BALTIMORE

Reducing our emissions from all sources is vital to protecting the planet.

In the Climate Assessment recently released by the White House, scientists warn that protecting the planet from the worst threats of climate change requires bolder action.¹ While the rise of global emissions are a serious threat to all, adverse effects from a changing atmosphere can compound existing poverty in a city like Baltimore, where almost 35 percent of households earn less than \$25,000 annually.² The city's initiative to reduce greenhouse gases can alleviate health burdens made worse by pollutants, and reduce added stressors that greatly impact residents in neighborhoods with concentrated poverty.

The greenhouse gas reduction goal in our 2012 Climate Action Plan calls for a citywide emissions

We need to collect and generate science-based information about ways to create jobs, plan for a sustainable future, prevent crime, and bring our communities together. Promote solar energy to reduce energy costs for low-income residents, create jobs, and combat climate change.

With clear benefits to people and natural ecosystems, limiting global warming to 1.5°C could go hand-in-hand with ensuring a more sustainable and equitable society. 1

reduction of 15 percent by 2020 (relative to 2010). With this Sustainability Plan Update, Baltimore now commits to achieving reductions similar to goals set by the Paris agreement: 25 percent reduction by 2020 and 30 percent by 2025 (relative to 2007). Our most recent inventory showed that emissions have dropped by 15-20 percent, but more work still needs to be done to ensure that all residents are able to breathe cleaner air and face reduced risks of natural disasters.

About 70 percent of our city's greenhouse emissions come from the use of energy that powers our homes and our commercial and industrial buildings. Transportation (such as driving cars) makes up 30 percent of our emissions, while waste disposal and water make up about one percent each.

STRATEGIES & ACTION

1. Improve efforts to reduce greenhouse gas emissions.

Action 1:

Update the Climate Action Plan by 2020, using an equity lens.

Action 2:

Establish a Climate Change Advisory Committee, engaging diverse community stakeholders in identifying and implementing strategies to prevent and reduce greenhouse gas emissions, to achieve a "drawdown" of carbon dioxide, and to equitably adapt to the impacts of climate change.

2. Modify operations and policies in city government to reduce emissions.

Action 1:

Set an ambitious reduction target specifically for government operations and adopt policies and standards to achieve these reductions through less fuel use, greater energy efficiency and conservation, and the use of renewable energy.

Action 2:

Require a life-cycle evaluation of energy savings and emission reduction options during the City's capital improvement request process.

Action 3:

Update codes, requiring new development projects to consider impacts from future climate events (such as heat waves and flooding) and to be designed for resiliency against these events, including through greater energy efficiency and use of renewable energy.

Action 4:

Work with community members and organizations to develop strategies to mitigate harm to, and to also increase the benefits accrued by the communities from climate actions.

3. Create new programs to reduce greenhouse gas emissions.

Action 1:

Develop outreach campaigns focused on actions to reduce emissions, such as switching to LED lights (which are 88 percent more efficient than

Volume II of the Fourth Annual Climate Assessment, U.S. Global Change Research Program, November, 2018.

Baltimore Neighborhood Indicators Alliance, "Vital Signs, 12th Edition." Based on Census Demographics. 2014

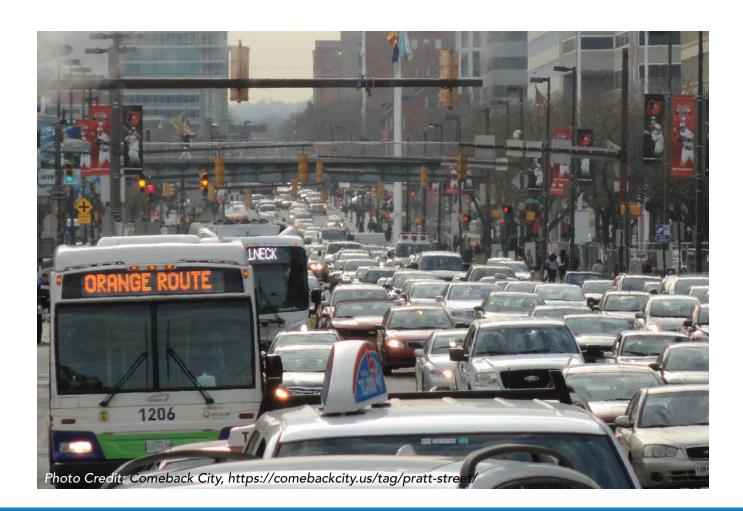
incandescent bulbs). Work in partnership with community members, businesses, and institutions. Identify and promote actions already being done by communities to conserve energy.

Action 2:

Commit to being a "Carbon Neutral City," meaning we would have a net zero impact on greenhouse gas emissions.

Action 3:

Reduce short-term pollutants, developing an action plan to reduce emissions of short-lived climate pollutants (such as the harmful chemicals found in some refrigerators and air conditioning units), which cause significantly greater warming than carbon dioxide and other greenhouse gases.



how we'll measure success:



Total greenhouse gas emissions (city-wide and for city government only)



Total emissions of short-lived climate pollutants

Your site for resources during weather-related and citywide emergencies:

Extreme Snow or Wind, Heavy Flooding, High Heat, Extreme Cold

Resiliency is the positively adapt or thrive amid changing climate conditions or emergencies. ability to anticipate and

BALTIMORE CITY
Resiliency
HUS

For information on becoming a Community Resiliency Hub, contact the Baltimore Office of Sustainability at (410) 396-4556









climate & resilience: Clean Air

Fresh air, both indoors and outside, supports good health for everyone.



THE BIG PICTURE

The air we breathe greatly impacts our health. Studies show poor air quality leads to negative outcomes like heart disease, stroke, chronic obstructive pulmonary disease, lung cancer, severe and frequent asthma attacks, acute respiratory infections, and learning disabilities. Increased federal air quality standards like tighter emission controls on power generation facilities and requirements that vehicles run more cleanly—have reduced levels of many pollutants, including ozone and nitrous oxide. Also, Maryland has implemented some of the strictest state requirements for car emissions in the country. Despite these improvements, periods of poor air quality persist. Levels of ozone can increase in the summer, and in the winter increased levels of particulate matter (solid particles suspended in the air) can damage people's lungs.

Air quality is also an issue indoors, particularly for those with asthma, allergies, and other serious health problems that disproportionately affect low-income people and children. Poor indoor air quality can be caused by dampness and mold from leaky roofs, poorly functioning furnaces, certain household products and chemicals, and pests like rodents and cockroaches. Because solving these problems relies on costly renovations, low-income renters are most impacted.



IN BALTIMORE

Zones of poor air quality create serious health issues, but can be improved with targeted, equitable investments.

While all residents breathe Baltimore's air, poor air quality has a greater impact on the health of those most vulnerable to developing chronic respiratory conditions, like the elderly or young children with asthma. Overall, the city has a high rate of emergency room visits for asthma, i.e. in 2013, the asthma hospitalization rate was 2.5 times higher than the state average. Acting to improve air quality can reduce health disparities especially in neighborhoods located near industry, busy roadways, or rail terminals. In 2011, for example, four of the five zip codes with the highest asthma hospitalization rates included neighborhoods with very high relative exposure to toxic air pollution, coming primarily from roadway vehicles.



GG Curtis Bay has [some of] the worst air pollution in the nation. [Our] health is on the line. 5

> - Student and longtime resident of Curtis Bay

Baltimore consistently earns a failing grade for high concentrations of pollution in the annual State of the Air reports published by the American Lung Association. In 2018 the group gave Baltimore an "F" for the number of high ozone days. 2

By focusing interventions on air quality hot spots, the City can create improved air quality and improved health for residents. In 2009, the South Baltimore neighborhoods of Brooklyn and Curtis Bay both experienced a sharp drop in asthma hospitalization rates. Both of these neighborhoods are close to coal-fired power plants, and the 2009 drop in asthma hospitalizations may have been influenced by the adoption of steep new pollution controls. Residents can also achieve change. One example was the response to a proposed incinerator in South Baltimore, already the home to one incinerator that is a major source of toxic air pollution. Residents met with neighbors and school, state, and local government officials and succeeded in preventing the new source of harmful pollution.1



STRATEGIES & ACTION

1. Reduce emissions from industrial operations to reduce harm to people living nearby.

Action 1:

Encourage state-of-the-art pollution controls on all "point source pollution" emitters and improve review of the effect of new permit applications for air pollution sources, particularly those in and near zip codes with high asthma hospitalization rates.

Action 2:

Work with federal, state, and regional agencies to reduce toxic air emissions from transportation, especially reducing pollution from freight vehicles.

Action 3:

Work with the Port of Baltimore and Maryland Department of the Environment to further reduce diesel emissions through retrofitting and replacing short distance trucks and cargo handling equipment, and through further electrification of operations.

Action 4:

Enact and enforce strong anti-idling regulations for commercial cars, buses, and trucks.

2. Assess and monitor how air quality varies across the city to identify neighborhoods in greatest need of improvement, and increase community awareness of how air quality impacts the health of children, the elderly, low income communities, and communities of color.

Action 1:

Partner with researchers to install air quality monitors equitably throughout the city to determine and map how air quality varies in different areas and at different times of year.

Action 2:

Integrate information about unhealthy air quality days into community preparedness workshops.

Action 3:

Adopt a policy or plan for eliminating use of pesticides and other toxic chemicals on public properties. Encourage integrated pest management and organic land care at hospitals, older adult facilities, restaurants and hotels, daycares, and other hospitality facilities.

^{1 &}quot;State of the Air 2018," American Lung Association, Report Card: Maryland. https://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/states/ maryland/, accessed 12/13/2018.

^{2 &}quot;Point source pollution" has a single, identifiable source, such as a pipe or factory smokestack.

Action 4:

Develop an alert system for Code Red days to encourage residents to avoid using paints, aerosols, gas lawn mowers, or other things which contribute to poor air quality. Ensure alerts are translated into the City's safe harbor languages.

3. Develop and support programs that can improve indoor air quality for those most impacted.

Action 1:

Implement an Indoor Air Quality management program for the school system to centrally monitor issues, log complaints, and address problems. Ensure that the safest products are purchased when procuring paints, building materials, carpets, and cleaning supplies.

Action 2:

Increase inspections, enforcement, and hazard remediation in rental properties related to mold, pests, furnace maintenance and venting, and other hazards, without passing on costs to vulnerable tenants.

how we'll measure success:



Number of days that levels of criteria pollutants, including ozone and particulate matter, exceed national standards



Asthma hospitalization rates relative to state average



Number of programs that can improve indoor air quality in public schools in neighborhoods most impacted by poor air quality











climate & resilience: Food Systems

A city committed to building an equitable and resilient urban food system.



THE BIG PICTURE

Food systems include the food we consume, as well as how food is produced, transported, sold, recovered, and disposed of. Food systems also include the policies, goals, and values that accompany each step of the process. While urban food systems rely on food produced around the world, there are many opportunities to influence what happens within a city. Cities are playing an increasing role in supporting healthy, sustainable, and equitable food systems. Some residents seek access to land and resources to grow their own food, while others seek to influence decisions about what food retail is available to them, their ability to nourish their household members with healthy and culturally appropriate food, and to secure resources to maintain food security. Persistent disinvestment has compromised the ability for many neighborhoods to access these opportunities and achieve these goals. When community members are in the position to define what they need from the food system it builds power. And when institutions listen

and respond to these needs, a more equitable system can be achieved. The food system includes how food is produced, which is addressed in the Urban Agriculture chapter of this Plan under "Community."



IN BALTIMORE

Residents are increasingly engaging to shape their food systems in Baltimore.

Baltimore's legacy of residential segregation, as well as poor access to jobs and educational opportunities, have created a significant inequity in resident access to affordable, healthy, and culturally appropriate food. Currently, about 146,000 residents live in areas that are more than a quarter-mile from a supermarket, have a high percentage of households without cars, have a high percentage of low-income residents, and have little healthy food at the neighborhood level. These areas are known as "Healthy Food Priority Areas," so designated in order to target policies and resources to where they are most needed to improve food access in Baltimore. Further, 85 percent of residents in Priority Areas are African-American, 1 just one example of why it is imperative to consider food system issues through an equity lens.

Currently, in my neighborhood the only choices we have for food is take out and processed foods from corner stores. I feel that food security is a basic need that should be available to everyone. 55

- Resident of Yale Heights on the idea that healthy food is a right

23.5 percent of Baltimore residents live in neighborhoods without ready access to affordable, nutritious food.1

The Baltimore Food Policy Initiative is a collaboration among several city agencies to address food policies from sustainability, food access, and economic perspectives. The Food Policy Action Coalition, a group of more than 60 engaged organizations and individuals, along with Resident Food Equity Advisors, ² participate in guiding the vision for the city's food policy work and help to shape policy and influence planning.



STRATEGIES & ACTION

1. Use Policy to create a more equitable food system.

Action 1:

Integrate food system priorities across government so that City agencies work to support implementation of the Healthy Food Environment Strategy³ and the Milan Urban Food Policy Pact, 4 which address retail, nutrition assistance, and urban agriculture to increase access to healthy, affordable, and culturally-appropriate food through policy, technical assistance, and incentives.

Action 2:

Implement equitable food policies by conducting robust research and strategic planning to inform policy that enhances the food environment in intentional and equitable ways. Implement tools that evaluate policies for race and equity metrics. This includes mapping the food environment, engaging residents, giving residents decision-making power in policy, and sharing bestpractices nationally.

Action 3:

Engage residents in policy creation and support community-led processes that seek to build greater food sovereignty 5 along with participation in and control of the local food system.

2. Increase resilience at the household, community, and food system levels.

Action 1:

Reduce acute food insecurity by protecting federal nutrition assistance programs (SNAP and WIC), federal meal programs (such as school breakfast, school lunch, summer meals, and senior Eating Together), and programs like food pantries. Ensure these are effectively implemented and utilized so that no residents experience hunger.

Action 2:

Increase overall resilience so that the need for food assistance in emergency situations decreases. Promote all residents' familiarity with nutrition, as well as with growing, storing, preparing, consuming, and properly disposing of food. Incorporate food into the Disaster Preparedness Plan update, and seek to make households, neighborhoods, and our entire city more resilient—able to withstand disruptions to the food system.

Action 3:

Support equitable food systems by acknowledging and working to address the power imbalances that exist with respect to land, control of resources, and decisionmaking power. Develop better metrics to measure progress.

- 2018 Baltimore Food Environment Report; https://planning.baltimorecity.gov/baltimore-food-policy-initiative/food-environment
- Resident Food Equity Advisors are Baltimore residents who influence and advise the City's Heath Food Environment Strategy
- 3. This strategy addresses food access, food assistance and food production as well as processes to engage stakeholders across the food system.
- www.milanurbanfoodpolicypact.org
- The right of peoples to healthy and culturally appropriate food produced through ecologically sounds and sustainable methods.

3. Strengthen and amplify the local food economy.

Action 1:

Leverage the purchasing power of the City and other institutions by adopting "Good Food Procurement" standards that prioritize nutritious, local, and values-based food.

Action 2:

Support and cultivate local, food-based businesses to stimulate the local economy and provide much-needed work opportunities (especially for those with less access to employment). Include models that have multiple sustainability benefits, such as cooperatively-owned or not-for-profit stores, as well as projects that incubate small businesses and/or provide job training.

Action 3:

Increase food recovery ⁶ as a means to build community empowerment, resilience, and workforce skills, while decreasing food waste and food insecurity.



6. Collecting surplus food that would otherwise be wasted and donating it to neighbors in need.

how we'll measure success:



Number of food system policies developed using race and equity frameworks



Prevalence of Healthy Food Priority Areas (measured by number of people)



Number of city procurement contracts that include "Good Food Procurement" standards



Number and distribution of children who are "food insecure"

