

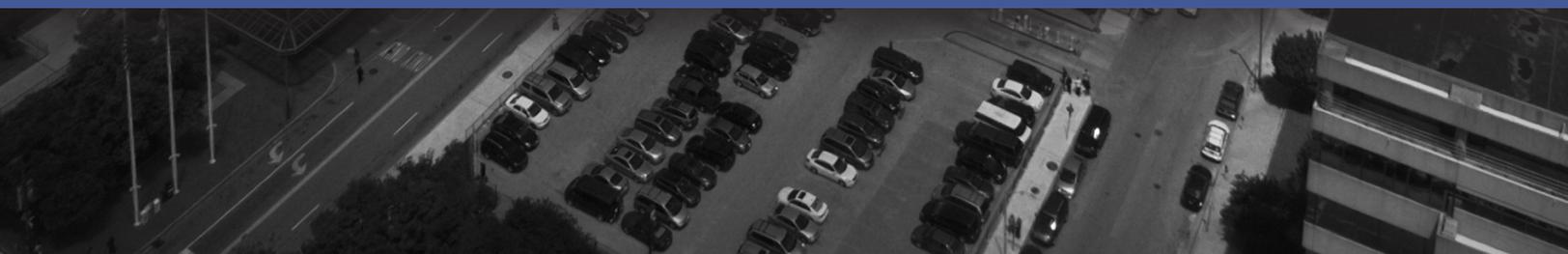


CITY OF BALTIMORE

Disaster Preparedness and Planning Project

A COMBINED ALL HAZARDS MITIGATION AND CLIMATE ADAPTATION PLAN

OCTOBER, 2013



Executive Summary

Vision Statement

Baltimore will be a city whose daily activities reflect a commitment shared by government, business, and citizens to reduce or eliminate impacts from current and future natural hazards.

Baltimore is highly vulnerable to many natural hazards, ranging from coastal storms and flooding to extreme heat and high winds. There is strong consensus that these types of extreme events will increase, both in frequency and intensity, over the coming years. Furthermore, Baltimore's climate is changing. In the past century, the City has observed shifting trends in weather patterns and climate conditions. The increase in natural hazards, combined with climate change, create impacts that will notably affect the City's residents, businesses, infrastructure, and natural systems, and threaten regionally significant assets.

The Federal Emergency Management Agency (FEMA) requires that every local jurisdiction in the United States develop and adopt All Hazards Mitigation Plan (AHMP) as a condition to be eligible for disaster-related assistance, and requires jurisdictions to update their AHMPs every five years. In 2012, the City of Baltimore adopted a [Climate Action Plan](#), which calls for the creation of a city-wide Climate Adaptation Plan. While an AHMP and a Climate Adaptation Plan could individually provide the required or necessary guidance to deal with extreme natural hazard events and climate change, the City of Baltimore has chosen to do much more than a routine update to the AHMP, or a routine development of a Climate Adaptation Plan.

In 2013, The Baltimore City Department of Planning and Office of Sustainability created the Disaster Preparedness and Planning Project (DP3) as an effort to address existing hazards while simultaneously preparing for predicted hazards due to climate change. This project develops an integrated All Hazards Mitigation Plan (AHMP), floodplain mapping, and Climate Adaptation Plan program that link research, outreach, and actions to assure implementation of a comprehensive and new risk-preparedness system for addressing existing and future impacts. Integrating hazard mitigation planning, which focuses on past events, with climate adaptation planning, which focuses on what will likely happen in the future, offers a positive, win-win solution for Baltimore City.



Flooding on the Jones Falls Expressway

Source: Baltimore Sun

In order to determine the most feasible and effective mitigation and adaptation recommendations for Baltimore, natural hazards which threaten the City had to be identified and defined. In Baltimore, the following hazards were considered to pose a significant threat:

- Flooding
- Coastal Hazards- Tropical Storms and Hurricanes, Nor'Easter, Sea Level Rise, and Storm Surge & Coastal Inundation
- Precipitation Variability- Precipitation, Winter Storms, Drought, Dam Failure
- Extreme Wind- Associated with Storms, Derechos, Tornadoes
- Extreme Heat
- Air Quality
- Additional Hazards- Earthquakes, Lightning and Hail, Tsunamis

The project included the creation of a 42 member DP3 Advisory Committee and working groups which provided guidance, support and feedback in the development of goals, strategies and actions based on information provided by the detailed natural hazards inventory, risk assessment and vulnerability analysis that were completed at the beginning of the project. The Advisory Committee working groups and DP3 Plan focus on the four sectors: Infrastructure, Buildings, Natural Systems, and Public Services.

INFRASTRUCTURE

One of the most pressing challenges facing states and municipalities today is the quality and capacity of built public **infrastructure**—the water systems, schools and municipal buildings, transit systems, and other core assets upon which we all depend. Inadequate or failing public infrastructure will negatively impact the City's growth. Already, infrastructure in Baltimore has been proven vulnerable to unpredictable, extreme weather events. To increase the resilience of both new and existing infrastructure, we must be prepared to mitigate and adapt to the impacts of climate change.

BUILDINGS

Baltimore's **buildings**, some of which have been significant features in their communities for decades or even centuries, add vibrant charm to the City. In the past, Baltimore's building stock has been subject to weather-related risks. In particular, flooding associated with extreme precipitation events has caused a great deal of damage. Buildings may be destroyed — entirely or in part — or rendered unstable. Resilience of Baltimore's building stock is particularly important considering that many structures serve as refuge for City residents during severe storms and other extreme weather events. Similarly, critical emergency facilities — hospitals, fire stations, police stations, government buildings, and the like — perform essential functions during these events and increase the City's capacity to respond to, and alleviate, the impacts of a hazard.

NATURAL SYSTEMS

The City's **natural systems** will suffer adverse consequences as a result of climate change; however, this plan embraces nature for its potential as a hazard mitigation and climate adaptation tool. In many cases, natural features are capable of offsetting greenhouse gases and alleviating the severity of weather events, effectively reducing long-term risks from climate change and hazards. On the other hand, if not properly maintained, natural elements may themselves become a danger during an extreme weather event.

PUBLIC SERVICES

A major role of this plan is to expand Baltimore's preparedness for future hazards. Without a strategy for conveying information about the risks and vulnerabilities associated with these hazards, its message will fall on deaf ears. Therefore, strategies relating to **public services** are concerned with distributing information, building resources, improving communication, and establishing response plans. Additionally, strategies are set in place that will prevent or limit health risks — including disease outbreak, physical exhaustion, and respiratory conditions, to name a few — that are triggered by extreme events



The DP3 Advisory Committee and staff have created a plan that encompasses four sectors, 50 strategies and 231 actions. Key examples of strategies and actions from the Disaster Preparedness and Planning Project Plan are:

- Integrate resiliency, redundancy, and structural stability into the City's drinking water system to ensure safe and reliable water storage and distribution
- Protect and enhance the resiliency and redundancy of electricity system
- Strengthen City zoning, floodplain and construction codes to integrate anticipated changes in climate
- Develop and implement hazard protections for critical facilities including hospitals, fire stations, police stations, hazardous material storage sites, etc.
- Create an interconnected network of green spaces to support biodiversity and watershed based water quality management
- Increase and enhance the resilience and health of Baltimore's urban forest
- Designate community leaders and organizations that can assist and provide support during hazard events
- Integrate climate change and natural hazards planning into all City and community plans

Protecting Baltimore and its residents from natural hazards, and adapting to a future affected by climate change will be challenging. The City of Baltimore is committed to addressing these issues, and this plan does so in a forward thinking, comprehensive manner. The Disaster Preparedness and Planning Project plan develops a unified approach to hazard mitigation, and climate adaptation, and provides clear guidance to City government and our citizens. The DP3 Plan supports Baltimore's sustainability and resilience, and will assist the City in achieving economic, equitable, and environmental growth.

