

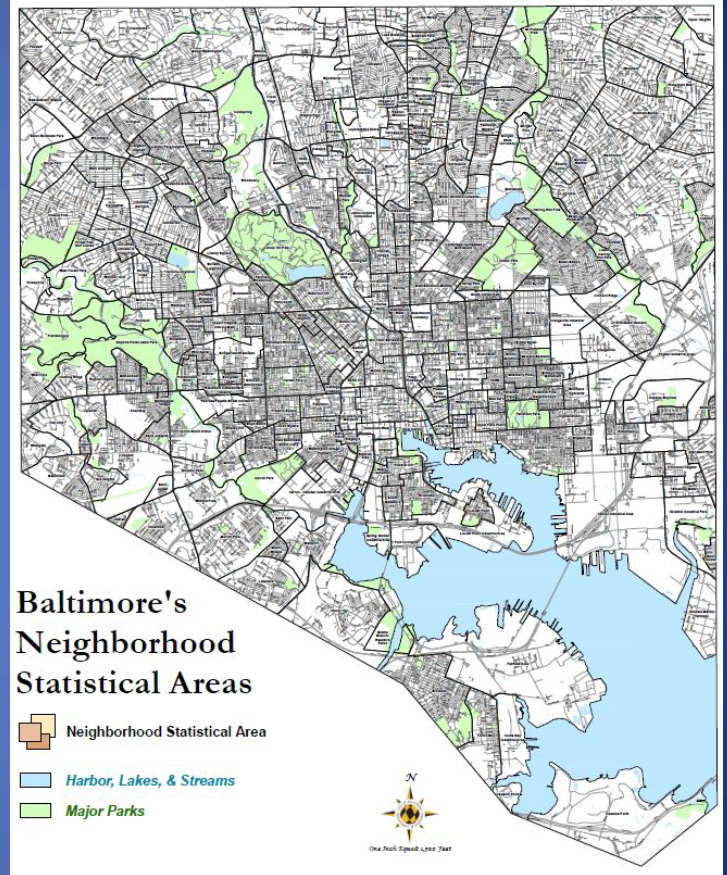
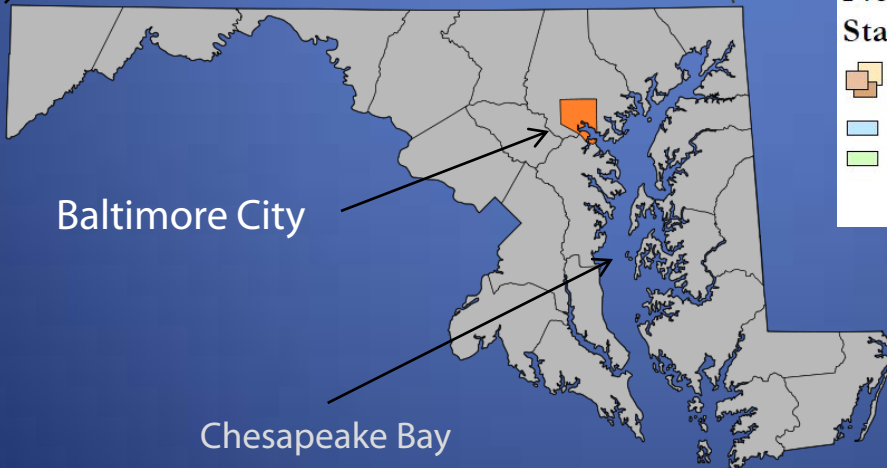
City of Baltimore

Disaster Preparedness and Planning Project (DP3)

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Baltimore City



Baltimore's
Neighborhood
Statistical Areas

-  Neighborhood Statistical Area
-  Harbor, Lakes, & Streams
-  Major Parks

Baltimore City - History



- Developed as a port city
- 60 miles of waterfront and four watersheds
- Industrial land uses related to shipping, energy and logistics
- Numerous bridges, tunnels, and railways needed to support large industrial uses

Baltimore City Today

- Most heavily developed area in the State of Maryland
- Population 620,000 (63.7% African American, 29.6% White, 4.2% Hispanic, and 2.3% Asian)
- Port and waterfront remain extremely important assets
- Home to many Universities and Health Institutions



Natural Hazards in Baltimore

- Floods
- Extreme Heat Events
- Hurricanes and Tropical Storms
- High Wind Events
- Snow and Ice Storms



Winter storm in 2010



Flooding from Hurricane Isabel 2003

Impacts on Infrastructure



Water main break



Damage to buildings



Structure collapse



Sink holes



Overloaded

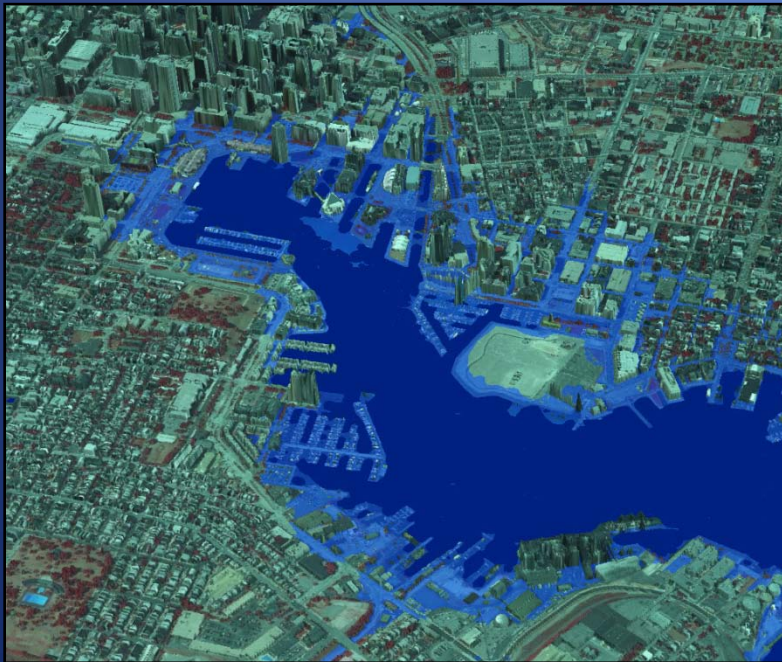


Transportation systems

Local Climate Projections



- Annual average temperatures increase by 3-8 F,
- Annual average precipitation increases by roughly 20%,
- Increased flooding and the gradual submergence of low lying lands,
- More frequent and intense late-winter storms,
- Sea levels will rise by 12 - 24 inches in Maryland throughout this century
- Weather patterns that stress human health (extreme heat, vector disease, drought, air quality, storms)



Ten Foot Storm Surge

(Fisher et al., 1997; US EPA 2011; NOAA 2008a)

Disaster Preparedness and Planning Project (DP3)

A framework for incorporating two initiatives and plans

1. Hazards Mitigation

A sustained action taken to reduce or eliminate long-term risk to people and their property from hazards

- Required activity for the City to maintain its eligibility for Federal Disaster Assistance
- Update required by FEMA every five years

2. Climate Adaptation

Changes made to better respond to new climate conditions

- Incorporates actions that focus on adjustment in natural or human systems in response to the impacts of climate change

New Model

- Approval by the Federal Emergency Management Agency (FEMA)
- Approval by the Maryland Emergency Management Agency (MEMA) & Maryland Department of Natural Resources (MDNR)
- One of the first and largest cities in the US to propose this framework. Act as a model for other cities to follow
- Forward thinking document



Benefits of this Model



- Capitalize on the hazard mitigation requirements to gain support from agency directors for adaptation
- Model hazard scenarios experienced and incorporating projected impacts of climate change



- Ensure adaptation strategies are incorporated into the Capital Improvement Planning (CIP) Process
- Develop a comprehensive system for addressing existing and future impacts

DP3 Process

Gather & Organize

- Identify and profile existing hazards
- Conduct an inventory that identifies all assets such as hospitals, schools, etc.
- Identify stakeholders and build an Advisory Committee

Assess

- Utilize modeling to identify risk from existing hazards and predicted climate impacts
- Complete a vulnerability analysis of identified assets and critical facilities
- Identify exposure, sensitivity and adaptive capacity

Plan

- Identify and evaluate hazard mitigation and adaptation strategies
- Generate implementation and monitoring plan
- Public input, outreach, and education

Implementation

- Prioritize strategies and recommendations
- Seek funding
- Track progress and evaluate effectiveness

Engagement with Agency Directors

- Buy-in from Mayor, City Council, Planning Commission
- Provide agency directors with the “how” when incorporating adaptation and hazard mitigation into existing plans
- Embed climate change into all planning documents
- Generate new policy focused on:
 - ❑ Integrating infrastructure planning with land-use planning
 - ❑ Initiating targeted building code and building standards reform and refinements
 - ❑ Exploring “no-regret” and reversible options for infrastructure capital, using existing or new technologies

Public Engagement

- Advisory Committee and Sub-committee working groups
- Community meetings and Town Halls
- Utilize the internet for continuous feedback and involvement
- Sustainability Commission & Planning Commission

Focus on:

- Constructive relationships with members of the public
- Show how a hazard can impact them
- Connection to health



Anticipated Challenges

Vulnerable Populations

- Primary concerns may not align with “what if” scenarios
- Typically have less resources to deal with impacts
- Less political involvement and distrust of government

Developers

- Don't like regulations
- Often don't manage their buildings

Prioritization by other City agencies

- May be overlooked
- Not on their radar



Learning from other cities



East Coast cities with waterfront infrastructure
Re-think and re-evaluate before re-building
Focus on resilience

Thank you
Questions?