POLICY BRIEF

RESILIENT CITIES: MUNICIPAL POLICY OPTIONS

With major disasters and storms becoming increasingly more frequent and extreme, municipalities across the United States are experiencing the consequences – and are looking for ways to fight back. Local officials recognize the need to anticipate and prepare for natural disasters and increased climate-associated risks in the short and long terms. While working to effectively enhance resilience of community infrastructure, cities and towns often have to enact a shift in policy and work within limited budgets.

Despite these challenges, cities recognize that resilience investment is more than worth the spent time and resources. A 2017 study from the National Institute of Building Sciences (NIBS) shows that every dollar invested in risk reduction can save six dollars in future avoided disaster losses, making a strong argument for robust investments in community infrastructure.

This brief documents a number of options for municipalities to assess risk and enhance resilience.

DEVELOP AND CARRY OUT A COMPREHENSIVE RESILIENCE PLAN

By devising and executing a holistic resilience plan, cities are able to frame both broader goals and smaller concrete action items. These plans can include specific requirements for infrastructure, like risk assessment and risk reduction for all building programs. Below are two effective examples.

- New York City, NY

  NYC's plan to become the most resilient, equitable, and sustainable city in the world, OneNYC, emphasizes disaster preparedness by both identifying chronic hazards and promoting resilient buildings, neighborhoods, infrastructure, and coastal defense tactics. The plan also features important social equity and sustainability provisions.

Figure 1: New Orleans' Christmas Tree Recycling Program is an effort to protect local wetlands. (Credit: NOLA.com)

- New Orleans, LA

  One of the pillars of Resilient New Orleans, the city's resilience plan, is the "adapt to thrive" model, which embraces the community's changing environment by reforming city operations and infrastructure to anticipate the future, not to just build for the present.

UTILIZE CODES AND STRETCH CODES

Depending on the state, local governments may have the primary responsibility for adopting and enforcing building codes, or may have the option of adopting stretch codes. Building codes can be a key tool in creating more resilient buildings and communities, especially where codes consider local risks and conditions, including in these examples:

- Chicago, IL

  Illinois allows local jurisdictions to adopt building codes that are more stringent than the Illinois Energy Conservation Code. The Chicago Energy Conservation Code does just that by including more rigorous standards for its buildings including a low solar reflectance requirement for roofs, which has resulted in

more than 500 vegetated roofs alone as of 2013. This measure enhances resilience by reducing localized summer temperatures due to heat island effect.

- Ocean City, MD

  In 2015, Ocean City made updates to its building construction standards and freeboard elevation requirements in response to flood risk and anticipation of future sea level rise. To reduce the risk of property damage from flooding, the city requires that first floor building elevations be at least two feet above the highest adjacent grade in X-zones, or three feet above current published FEMA 100-year base flood elevations for most areas of the city.

REQUIRE RESILIENCE RETROFITS

Cities at risk of natural disasters have begun adopting mandated retrofit requirements for existing buildings.

- Los Angeles, CA

  The 2016 Los Angeles Seismic Retrofit Ordinance requires retrofits of vulnerable buildings most likely to collapse in an earthquake. This specifically applies to wood frame soft-story buildings and non-ductile concrete building built before 1978.

PROTECT ANCHOR INFRASTRUCTURE

When disaster strikes, schools, police and fire stations, and hospitals can all serve as community "anchors" that can become hubs of recovery and rescue operations. Ensuring the resilience of anchor infrastructure can be critical to effective disaster response and recovery of the surrounding community.

- Virginia Beach, VA

  Virginia Beach City Public Schools enacted beyond code requirements, making two of their schools the only Category 2 shelters in Virginia Beach. By providing models for future-focused design that takes the effects of

climate change into account, the school district helps ensure the resilience of its community.

Figure 2: The LEED Silver certified College Park Elementary School in Virginia Beach was built to withstand a Category 2 hurricane. (Credit: WPL)

SUPPORT VULNERABLE POPULATIONS

Low-income communities are disproportionately affected by disasters, heat islands, and poor environmental quality. Some cities address vulnerable populations in their resilience plans.

- Boston, MA

  As part of Boston's comprehensive resilience strategy Resilient Boston, the city outlined several goals for strengthening the overall community, including increased connectivity, accelerating sustainable infrastructure, and the reduction of heat islands across the city. Addressing these needs could have a significant benefit on traditionally underserved populations.

- Dallas, TX

  In 2018, the City of Dallas released its first holistic resilience strategy that aims to address a wide range of challenges, with equity at the core. The plan looks to address public health issues that affect vulnerable populations most severely, such as urban heat island effect and air quality.

PROMOTE COASTLINE RESILIENCE

Cities situated on the nation's coasts face unique risks including hurricanes, flooding, and sea level rise. Some cities have implemented coastline resilience measures to mitigate these risks.

- Honolulu, HI

  In 2018, Mayor Caldwell of Honolulu issued a formal [directive](#) to all city agencies and departments to use the city's recent [guidance](#) on planning improvement measures to address the impacts of climate change and sea level rise. The Honolulu Resilience Office has been tasked with developing a [Climate Action Plan](#) for the island of Oahu, which seeks to address impacts including coastal erosion, beach loss, flooding, and more frequent and more intense hurricanes.

- Miami Beach, FL

  In collaboration with Miami Dade County, the City of Miami created a [resilience strategy](#) to address the effects of climate change, especially rising sea levels. The plan includes improvements to drainage systems, elevating roadways, and updating regulations to reflect increased elevation requirements.

PLANT MORE TREES

When incorporated into urban areas, trees can reduce heat island effects, improve air quality, mitigate flooding, and sequester carbon, all of which can help strengthen the resilience of cities.

- Detroit, MI

  As part of the city's 10-point plan, Detroit has committed to plant 10,000 trees in residential areas. The [10,000 UP Tree Initiative](#) focuses on replacing dead and damaged urban trees with new ones over the course of three years.

Figure 3: Tree planting in Detroit as part of the 10,000 UP program. (Credit: Detroit News)

- Louisville, KY

  The City of Louisville incorporated urban tree planting in its [resilience plan](#) following a 2015 assessment on the extent of the city's tree canopy. The plan cites the success of a recent [pilot project](#) examining how trees and landscape buffers have improved air quality.

USGBC TOOLS FOR RESILIENCE

Cities are taking great steps towards enhancing resilience, but effective tools are required to face both short and long-term threats against residents and infrastructure. To properly assess current and future conditions and form and execute a resilience plan, a city should adopt a structured, integrated approach.

With the support of third-party verification, provided by GBCI, each of the certification systems featured here can help guide communities towards concrete ways to measure and enhance resilience through opportunities for planning, mitigation, adaptation, response, and recovery.

- [LEED](#) equips buildings, communities, and cities with effective resilience strategies, including energy and water efficiency, community connectivity, and use of durable and sustainable materials.
- [SITES](#) encourages sustainable land management through purposeful project design and maintenance conducted with the surrounding ecosystem in mind.
- [PEER](#) ensures the reliability and resilience of power systems and grid operations.
- [RELi](#) focuses specifically on maximizing the resilience of buildings and communities by requiring projects to withstand constant stressors and acute hazards.

For more on USGBC's work on resilience, please visit https://new.usgbc.org/center-for-resilience or contact us at resilience@usgbc.org.

For more information on USGBC offered tools, guidance, education, and more, please send us a message at publicpolicies@usgbc.org.