



Assessing and Improving Neighborhood-Based Resiliency in Cambridge

A report by the Mayor's Special Committee on Neighborhood-Based Resiliency

resiliency:

the capacity of individuals, neighborhoods, institutions, businesses, and systems within a city to equitably survive and adapt to persistent changes, chronic stresses, and acute shocks.

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Executive Summary

The Mayor's Special Committee on Neighborhood-Based Resiliency was convened by Mayor Denise Simmons in 2016, chaired by Councillor Craig Kelley, and met monthly for more than a year. Committee members represented a broad spectrum of Cambridge.

The Committee gathered information from City staff, non-profit organizations, subject matter experts, businesses, and institutions. Starting with a focus on the effects of climate change, the Committee developed a broader view of the social, economic, and personal vulnerabilities and needs which are described in this report. This report identifies resiliency challenges in the *interconnected* areas of infrastructure, social structure, and policy.

The report's principal recommendation is the establishment of a **Chief Resiliency Officer** (CRO) as a permanent City position. A CRO can spearhead and coordinate efforts at all levels, playing a vital role in the achievement of resiliency measures including: increased social cohesion and mutual assistance in the neighborhoods; expanded citizen participation in resiliency planning; greater cooperation between City agencies; ongoing assessment of City policies and practices for their impacts on neighborhood resiliency; establishing resiliency partnerships between the City and faith-based organizations, non-profits, businesses, universities, neighborhood associations, and other institutions; infrastructure measures to address storm water intrusion, reduction in paved surfaces, and expanding the City's tree canopy; and zoning changes in areas such as green roofs, onsite power generation, and flooding notification and response plans.



Committee Members

In her letter establishing the Committee, Mayor Simmons tasked the chair with assembling a Committee “with membership drawing upon the following breath of community voices.” With a diverse Committee, pulling in a “wide variety of experiences, concerns and expertise,” the Committee could “distill what those with a background in disaster preparedness share with the committee, in order to formulate a comprehensive review that non-experts on the City Council and across the community will actually be able to understand and utilize in a meaningful way.” Accordingly, the following members of the public served as members of the Committee.

- Craig A. Kelley, *Chair*
- Ethridge King, *Vice Chair*
- Marc Aidinoff
- Sonia Andujar
- Suni Dillard
- Gary Dmytryk
- Emily Harrison
- Julia Holloway
- Gail Kubik
- Sean Rogers
- Sam Seidel
- Tony Spears
- Steven Wineman
- Wilford Durbin, *Secretary to the Committee*

Introduction

The Mayor's Special Advisory Committee on Neighborhood-based Resiliency (hereafter referred to as the "Committee") held regular meetings on the last Tuesday of the month from March, 2016 through December, 2017 (for months that were cancelled, see minutes online at CambridgeResiliency.Org). At the Committee meetings and other listening opportunities, members heard from City staff, non-profit organizations, subject matter experts and others involved in various aspects of resiliency planning and implementation. These included representatives from:

- Cambridge Inspectional Services Department
- Cambridge Fire Department
- Cambridge Department of Public Health
- Cambridge Community Development Department
- Cambridge Police Department
- Cambridge Department of Public Works
- Cambridge Water Department
- Salvation Army
- Eversource Power
- Northeastern University

Additionally, Committee Chair Councillor Kelley met separately with representatives from various Cambridge and non-Cambridge businesses and institutions, including:

- Harvard University
- MIT
- Lesley College
- Boston Properties
- Cambridge Innovation Center
- Boston Chief Resiliency Officer, Dr. Atyia Martin
- Cambridge Public School District
- Residents of numerous Cambridge Housing Authority buildings
- Commonwealth (formerly Doorway to Dreams)

The Committee also commissioned a social cohesion survey of Cambridge residents through Northeastern University researchers Courtney Page and Daniel Aldrich that was made available through print mailings to residents, and posted online from October 1 through 20. The survey was designed to help researchers better understand the important connections that bind neighborhood networks, and to examine the fabric of Cambridge's communities and where it might be strained. The data collection portion of the survey has been completed, and the results are expected to be finished in early 2018.

The Committee reviewed how other cities around North America defined resiliency, and decided to adopt a definition for resiliency as "the capacity of individuals, neighborhoods, institutions, businesses, and systems within a city to equitably survive and adapt to persistent changes, chronic stresses, and acute shocks."

The Committee maintained a familiar definition of neighborhoods as the same geographic entities Cambridge uses to discuss them, numbers One through Eleven with the understanding that it was important to always think about how neighborhoods blur, and cross over.

Although there are a number of entities that help build and sustain resiliency in and around Cambridge, such as the Salvation Army, the Red Cross, the Department of Conservation and Recreation, the State Police and so forth, the Committee focused its attention primarily on those entities over which Cambridge has direct control, such as DPW or the Water Department. There was a secondary emphasis on partner-type organizations that exist in Cambridge such as our universities, non-profits, faith communities or commercial entities. The role of individual citizens and their households, as well as where their resiliency efforts might intersect with other work in this field was always at the center of the Committee's discussions.

As the Committee thought about resiliency, it began to use resiliency as a way to consider issues on two different dimensions. Take the issue of whether or not we have a resilient voting process in Cambridge. At first we might think of the problem from a downside risk perspective. For example, what happens if the voting polls are compromised in any way or if voters can't get to the polls? Our understanding is that Cambridge does not, in fact, have a back-up plan in place. A "Plan B" approach would be a good example of how the Committee worked through some scenario planning.



However, as the Committee looked more and more at resiliency, we began to also think about what the upside perspective of resiliency would be. In the voting example, we might think about how we'd create a climate and ecosystem where voters wanted to vote, found it easy to get to the polls, and had access to information needed to make create a positive experience. Similarly, take the example of food availability. We can think about whether or not trucks may not be able to deliver food to supermarkets and how long it would take for suppliers to run out of food. Or we could think about food waste, the effectiveness of food "sell by" dates, and making communal gardening more widely available. As you'll see in the report, many of the issues the Committee grappled with can be viewed through multiple lenses. We believe, then, that resiliency can be viewed as a process of working through challenges on multiple dimensions and, in fact, that building out a broader perspective of both proactive and reactive scenarios is itself an important part of building resiliency.

Findings

During its early discussions, the Committee approached the issue of neighborhood-based resiliency with a heavy emphasis on climate change and the need for neighborhoods to be resistant to threats, such as flooding, extreme heat, drought, flash floods, invasive species and similar climate-related natural challenges. Over the course of its work the Committee realized that, especially for Cambridge's most vulnerable residents, being resilient also includes job security, financial literacy, and access to appropriate food options, affordable housing, and similar immediate needs. Climate change remains a specific resiliency threat but it is also a 'force magnifier' for other resiliency challenges.

After reviewing a wide variety of inputs, the Committee found that there were three actionable areas for improvement: infrastructural resiliency, soft structure resiliency, and policy changes. The first consists of engineering and preparedness issues, the second focuses on human capital, social cohesion and social science issues, and finally City policies include zoning and licensing changes. While these three types of resiliency often complement each other and are each important, it was often noted that there is frequently a gap between them.

The Committee further recognized that past examples of resiliency challenges, whether from storms or financial upheavals, can be informative in developing current resiliency plans but are not dispositive—our collective future contains vast amounts of uncharted territory that will require imagination, knowledge and flexibility to successfully navigate. In the face of a changing world, resiliency must reflect ongoing and emerging needs. The need for resiliency efforts to be continuously adaptive in nature makes a formal and intentional civic and municipal focus on resiliency all the more important or our resiliency efforts will quickly become outdated and inadequate.

Based on its work over more than a year, the Committee came up with specific requirements for, and characteristics of, a resilient city. The Committee also developed a number of specific recommendations for improving resiliency in Cambridge's neighborhoods.

While some resiliency efforts, such as 'flood proofing' Fresh Pond, require significant capital investments at the municipal level, many resiliency efforts, such as putting personal labels on electronic devices for easy identification and return should they be misplaced, are not only simple but have daily applicability. True resiliency focuses on building core competencies to meet life's challenges at a minor level which, woven together as individuals and communities, build a greater level of communal resiliency than the sum of the various parts and can help mitigate the impact of 'problems of consequence.'

Nonetheless, neighborhood-based resiliency requires significant investment by municipal government in terms of intentional outreach and education, assistance in evaluating and addressing risks, developing protocols for assessing resiliency impacts of government decisions and so forth. Because effective emergency planning decreases the impact of disasters at all levels, such municipal resiliency programs may pay for themselves in avoided costs when stressful situations occur.

To ensure that Cambridge focuses, and stays focused, on the challenges of building resiliency at the neighborhood level, the Committee recommends that it create the position of a **Chief Resiliency Officer**. This position, already adopted in many other cities such as Boston and Baltimore, would allow the City

to be more intentional in its resiliency-building efforts and having a specific resiliency point of contact would help ensure that work in this area is coordinated across agencies and neighborhoods and builds resiliency for individuals, families, households and neighborhoods.

Cambridge's Resiliency Challenges

Through its conversations with various community stakeholders, the Committee identified several resiliency challenges to Cambridge residents that should be addressed by community leaders in municipal government, nonprofits, universities, and neighborhoods. A number of these challenges are also reflected in Cambridge-specific data such as Community Development Department (CDD) reports, but many identified challenges reflect perceived or intuitive aspects of resiliency and as such are not directly supported by Cambridge-specific data. Some of these challenges present as traumatic events to which residents must respond and are acute. These might include flooding events, fires, or increasingly violent storms. In addition to these challenges, we have added systemic, or passive challenges, which are at the core of one's ability to respond to a traumatic event resiliently.

All structures in a neighborhood might sustain comparable damage from a flooding event, for example, but the ability of residents and families to mitigate that impact—whether to adapt or thrive in the aftermath—depends heavily on countless other resiliency factors. Resiliency challenges such as lack of social cohesion, inequitable wealth distribution, and inequitable educational results, problematic in their own right, can multiply or enhance the stress and disruption of a traumatic event. When families struggle to meet the demands of everyday life, traumatic events and disasters can prove existential.

Building resilient *neighborhoods*, then, will require that municipal authorities address systemic resiliency challenges to allow all residents to mitigate shared traumas and adapt equitably. Although these systemic challenges are listed separately here, they can be and often are, combined and may be applicable to any applicable acute traumatic events.

Lack of Social Cohesion

- Isolated individuals without a neighborhood network to share resources, skills, and institutional access are more at risk to all threats. This can be especially true for seniors, transient communities, recent immigrants, non-English speakers, and undocumented immigrants.
- As a college town, Cambridge experiences a frequent churn of transient residents. As much as 31.3% of the Cambridge population are individuals 18 years or older who are enrolled full-time or part-time in a college or graduate school degree program.
- Cambridge has a disproportionate number of renters, with some 65.4% of housing units being rented. (CDD, Demographics and Statistics FAQ)
- Fences between yards, lack of common spaces in dense neighborhoods, and infrequent connection outside of the local community make building social cohesion tougher for residents.

Lack of Affordable Housing

- The rise of housing prices, for both rent and purchase, has made it difficult for many people to live in Cambridge without paying well over 30% of their income in rent. (CDD, Middle-Income Rental Program)

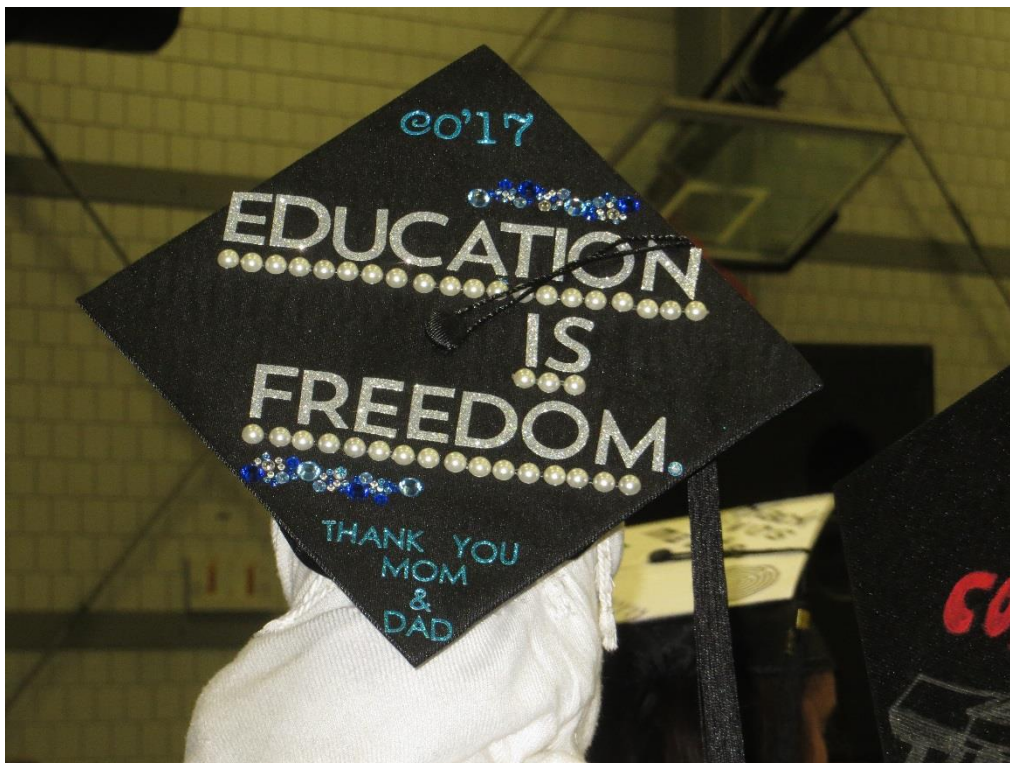
- Very few private units exist in Cambridge that are inexpensive enough for someone with a low income to afford even with a HUD voucher.
- Wait-lists for CHA apartments are both long and often frozen.

Inequitable Wealth Distribution

- Many long-term residents without higher degrees are unable to compete financially for housing, services, or goods with people who work for Cambridge's high-tech companies such as Google, Microsoft, or Biogen.
- Lack of readily available financial instruments and financial literacy.

Inequitable Educational Results

Educational results are uneven, with students of color and/or students from economically disadvantaged families disproportionately not doing as well as white students. (DOE) This suggests that a discrete block of our student population does not gain the necessary academic skills to compete in Cambridge's housing and job markets. Results of these disparities include displacement from market-rate housing and people feeling that they or their neighbors have been 'forced' out of Cambridge.



Inequitable Food Access

- Food swamps lack in access of healthy or diverse foods, typically offering only to low-nutrition food for many of Cambridge's more vulnerable residents.
- "High-end" supermarkets such as Whole Foods are not accessed equally, increasing gentrification in some markets.
- Expense of food and other issues, such as understanding how to cook certain foods, can result in poor nutrition meals even where healthier options are geographically accessible.

Urban Heat Island Effect

- Cambridge is expected to have three times as many [cooling days](#) in 2030 as it does now.
- Decreasing tree canopy around the City increases localized Urban Heat Island Effects. (Cambridge)
- Paving of parking lots, driveways, streets and so forth increases Urban Heat Island Effect.
- Urban Heat Island Effect is especially dangerous for seniors without dependable access to air conditioned spaces, to include sleeping spaces.

Flooding

- Much of Cambridge is in a 100/500 year floodplain such as Alewife, meaning that during a storm event that statistically should happen only once every 100/500 years, the area will experience flooding. Other parts of Cambridge are subject to localized drainage backups and floods during intense rainfall or snowmelt events such as The Port. (Cambridge)
- Eventually, Sea Level Rise (SLR) and storm surges will push floodwater from Boston Harbor over or around the Mystic and Charles River dams, flooding adjacent lands. While this level of flooding is not anticipated to occur for decades, it is possible that such flooding will occur sooner than predicted. Additionally, flooding of the Charles and Mystic River systems, to include the Alewife Brook, can happen if precipitation overwhelms the Rivers' dams' abilities to pump water into the Harbor.
- Flooding of underground structures such as basements or parking garages can occur overland or through groundwater movement in Cambridge's porous soils.
- Cambridge's flooding would largely be 'bathtub' type flooding without destructive currents, but flood water of any type is highly contaminated and the resulting flood debris would pose considerable cleanup challenges.
- Flooding can be very localized and somewhat unpredictable, sometimes even depending on whether a sewer drain has become clogged with leaves or snow & ice during a precipitation or melting event.

Electric Grid Vulnerabilities

- Alewife substation is in a flood prone area.
- The general grid is vulnerable to malicious actions or accidents as well as simple overload, most especially on our hottest days when air conditioning units are most needed.

- Replacement of crucial electric infrastructure is expensive, challenging and time consuming. Some replacement equipment may have to be specially made at a time when other electrical systems are seeking the same support, leading to even longer delays in bringing the grid back on line.
- Localized electric backup facilities, whether on-site generators or battery storage, provide limited electricity, can pose fire risks and can take up valuable space or otherwise run counter to zoning, fire safety, noise or other regulatory programs.
- Without electric service, many buildings in Cambridge are likely to become uninhabitable due to HVAC, fire safety or elevator limitations. Even buildings with backup generation capabilities are unlikely to be able to run more than minimal health & safety functions or to have the ability to run 24/7 for an indefinite period of time.

General Safety Concerns

- Fire is a constant threat in any human environment. Cambridge experiences both major and minor fire events and needs to have the capacity to minimize its fire threat and to respond to fires. Individual fire safety actions, from having accessible fire extinguishers to properly handling flammable material, are crucial to maximizing fire safety.
- Mental Health awareness, appropriate staff training and provision of support services are important factors in minimizing the challenges many of our most vulnerable residents face, either chronically or on an episodic basis.



- Crime is ongoing concern across Cambridge but presents itself in various ways. Public safety organizations, such as the Cambridge Police Department, the Peace Commission or the Emergency Communications Center all have discrete and changing roles in ensuring both that actual criminal activity is minimized and that communities and individuals receive appropriate support after crime as occurred.

- Overdoses remain a serious public health concern. Vice Mayor McGovern has

authored a [report](#) on how Cambridge should move to address this crisis. (McGovern)

- Individuals with special needs may require special, and sometimes unique, consideration in planning processes or support in crisis situations. Mobility limitations during a fire or other evacuation event, street safety for the visually impaired and the need to consider food allergies during public celebrations are examples of important special needs awareness.

Components of a Resilient City

A resilient city is made up of a variety of interlocking parts, none of which result in true resiliency on its own but all of which, when connected to each other, build a resilient system. The pieces of resiliency will be different for different situations, but there are a number of overarching themes that, when followed, will help lay the foundation for a truly resilient city and its neighborhoods.

Chief Resiliency Officer

A permanent Chief Resiliency Officer (CRO) who works out of the City Manager's Office, or perhaps in a specific office like the Peace Commission, and interacts with all Departments, with particular focus on the outreach and services provided by:

- Community Development Department
- Department of Public Health
- Department of Public Works (DPW)
- Cambridge Police Department
- Emergency Operations Center

The point is not so much that the CRO has a specific work station but that they are a known resource for City staff who provides required oversight of all City actions from a resiliency perspective and can tap into existing knowledge and communication networks to expand the impact of resiliency planning efforts.

A CRO's duties would include:

- Developing a comprehensive strategy to help create a common understanding of the characteristics of a resilient neighborhood.
- Reaching out to underprivileged or at-risk populations to emphasize the importance of resiliency to ensure their resiliency capacity is on par with their more affluent peers.
- Developing a resiliency 'train the trainer' program for resiliency implementation efforts.
- Promoting resiliency on a regular basis at all levels.
- Assessing City actions for resiliency and making specific suggestions on how to improve it.
- Ensuring that resiliency projects have an immediate positive impact while proactively addressing future challenges.
- Identifying localized resiliency issues, to include ones noted in Cambridge's existing Climate Change Vulnerability and Adaptation work. (Cambridge)
- Convening CRO conference for similar resiliency professionals.
- Bringing resiliency-related discussions to the constituents at community meetings, school councils, libraries and similar spaces where residents interact with each other and local government.
- Identifying, accessing and expanding existing resiliency programs, whether categorized as such or not. For example, in an expanded definition of "resiliency" that goes beyond climate change, the Department of Public Health's Mental Health First Aid training program is just as important of a tool as is the Public Work's Urban Forestry program.

- Organizing a "done by/best practices" review of how City departments and other cities are handling resiliency.

Trust

Trust between and among City agencies, neighbors, non-profits, institutions and other local entities is crucial in building resiliency at the neighborhood level. Trust requires room to learn from honest mistakes, as well as honesty and transparency in relationships. Successful, mutually beneficial interactions of all types are the foundation of trusting relationships.

Neighborhood Connection

Neighbors who know neighbors create social cohesion and are able to support each other across a variety of experiences. The mutual assistance neighbors provide varies from the mundane, such as taking in a neighbor's packages for safe-keeping to bringing an elderly resident into an air conditioned space to avoid heat stroke. The common element in any of these actions is the willingness of residents to take the initiative to offer and accept assistance as appropriate.

The Committee commissioned a survey through Northeastern University to assess Cambridge's social cohesion and will revisit this issue in greater when the results of the survey are released in early 2018.



Ability to Address the Needs of its Most Vulnerable Populations

A resilient city has a formalized, intentional and effective way of addressing the needs and concerns of its most vulnerable populations that reflects, among other things, linguistic, cultural and religious variations. These populations, who are often disassociated from City leaders and decision makers, include:

- Seniors, who are especially vulnerable to heat events or financial fraud, may find it difficult to navigate the wide array of resources available to them.
- People with disabilities
 - Mentally
 - People with Mental Health issues can present particular challenges during both routine and stressful life events. Having a core set of city staff and other individuals or institutional actors who can recognize and respond to such circumstances in an appropriate manner can mitigate problematic situations.
 - Physically
 - All city policies and actions, from on-street parking delineations to snow clearance to building renovations, need to reflect the mobility and other challenges experienced by people who, temporarily or permanently, have physical limitations such as being deaf, being blind, being unable to walk and so forth.
- Non-English speakers must have access to appropriate documentation in a language or format that they can understand and act on. This includes not only having flyers and handouts in multiple languages but also ensuring that videos and other communication efforts do not assume that all viewers speak English or have other constraints in accessing city messaging efforts.

Resiliency Programs that are bottom-up in nature

Resiliency programs are, by nature, imbued with redundancy and work best when they originate from the 'bottom' rather than being driven from the 'top.' A city that has a common basic level of preparedness is better able to address all challenges, whether acute or chronic. The specifics of basic preparedness vary from situation to situation and require intentional planning in all circumstances, but in general, basic preparedness includes the following:

Individuals

- Have an adequate supply of medication on hand for home and travel and storage capacity, such as coolers, for medications requiring special attention
- Minimize the disruptions to daily activities resulting from electric loss, to include access to flashlights and batteries, having backup phone chargers and understanding how various systems, such as heat, air conditioning and elevators, may be impacted by a power outage.
- Have effective communication plans to include redundancies such as backups of important numbers & emails on laminated card in wallet.
- Understand their financial situation and act appropriately
- Identify and protect important documents such as:
 - Passport
 - Birth Certificate

- Account passwords
 - Bearer bonds
 - Pictures
 - Health care proxies and similar legal documents
- Have a variety of basic life skills such as
 - Car care
 - Knowledge of personal allergies
 - Ongoing attentiveness to particular hazards
 - Ice
 - Tripping hazards
 - Texting while walking or driving
 - Understanding of how the impact of personal limitations, especially temporary ones such as a broken leg, may impact ability to move in a fire situation, an MBTA emergency, a stormy day, etc.

Families and Households

- Understand, as a family or as household of unrelated individuals, the importance of things like realistic communication plans, pre-arranged meeting places should members become separated in an event, the special needs of children, how to manage allergies and other situationally important issues.
- Periodically review resiliency efforts and, as appropriate, practice drills such as escaping a burning home.

Neighborhoods

- A resilient neighborhood has plans and resources, developed and staged ahead of time, to handle a variety of stressful events, emphasizing:
 - An event's unique challenges
 - The importance of coping with challenges as a community with an emphasis on mutual assistance
 - Reliance on jointly held resources, both personal and governmental, rather than individual stockpiling of necessities
- A resilient neighborhood has clear and commonly understood expectations about the City's role and relevant constraints in:
 - Assisting with preparedness planning
 - Carrying out response operations
 - Undertaking ongoing maintenance operations
 - Training and supporting City staff and residents in building resiliency

Recommendations for Building a Resilient City: Social Structure

The Committee makes the following recommendations to improve Social Structure around resiliency.

Hire a permanent Chief Resiliency Officer

- Create a City procedure ‘map’ to make sure everything is reviewed for resiliency by a specific authority such as the Chief Resiliency Officer (CRO).
- Hold consistent neighborhood forums about resiliency that reflect the geographically and culturally broad aspects of our neighborhoods to ensure maximum and diverse participation.
- Support and monitor all aspects of Cambridge’s resiliency programs.

Expand Resiliency Planning beyond City agencies while still providing agency support

- A formal and City-supported “Citizens Core” like in New York City.
http://www1.nyc.gov/site/em/community_business/nyc-citizen-corps.page
- “Share your space” inventory for response activities where private or non-profit entities may have potentially useful facilities. NYC provides an example:
http://www1.nyc.gov/site/em/community_business/share-your-space-survey.page
- Outreach and education efforts targeted at specific populations or resiliency challenges like NYC’s “Ready Girl”
<http://www1.nyc.gov/assets/em/downloads/pdf/jobs/Ready%20NY%20Kids%20Ready%20Girl%20Presenter%20Job%20Posting%203.pdf> or families with children:
<http://www1.nyc.gov/site/em/ready/kids.page>

Conduct ongoing reviews of First Responders and other agencies’ abilities to manage traditional and non-traditional stresses

- FEMA has developed a report to help fire departments assess their activities in non-fire response operations. Given how CFD is a First Responder for multiple threats, from fires to floods to building collapses, having a formal focus on reviewing those expanding responsibilities is important.
https://www.usfa.fema.gov/downloads/pdf/publications/operational_lessons_learned_in_disaster_response.pdf
- Cambridge must view the Department of Public Works as a First Responder on par with CPD and CFD.
- CPD, the Consumers Council, the Public Libraries and other City agencies should formalize their responsibilities and increase their capacities to educate people about digital safety and to respond to digital crimes such as identity theft and internet-based frauds. This would include instruction in our public Schools, at our libraries and so forth to help people acquire the skills to be safe in a digital world. Programs already exist that are aimed at children (<https://www.pta.org/home/family-resources/safety/Digital-Safety>) and adults (<https://www.microsoft.com/about/philanthropies/browsepdf.ashx?path=http://go.microsoft.com/?linkid=9682632>)

Establishing resiliency partnerships between the City and Community Stakeholders

- Communities of faith
- Non-Government Organizations (NGO) such as the Red Cross, the Margaret Fuller House, the YMCA and the YWCA.
- Universities and employers and businesses of all sizes
- Cambridge should annually review on-call contract services and contact points for resources such as social support provided by Riverside Community Care (<http://www.riversideecc.org/>), NGO emergency support from the Red Cross (<http://www.redcross.org/local/massachusetts>) and government agencies such as the [Small Business Administration](#).



Resiliency Teams

Create resiliency teams that are trained and empowered to help neighborhoods build core resiliency competencies starting at the personal level and expanding to households and neighborhoods.

Review of school and non-school curriculum to help improve financial literacy

Conduct a review of educational programs at all levels to determine opportunities to improve financial literacy for all Cambridge residents. One Boston-based organization that could help with this effort is Commonwealth. <https://buildcommonwealth.org/>

Document Protection

Implement a city-wide document protection program that could be encouraged and supported through activities at local libraries or in concert with “resiliency champions” such as a local version of NYC’s “Ready Girl.” Document management and protection has daily benefits even when the ‘disaster’ is very small in scope, but lessons learned from large scale disasters such as wild fires and hurricanes provide the most relevant guidance: <https://www.fema.gov/news-release/2015/11/18/keep-your-important-documents-safe-disaster>

Neighborhood building activities

Social cohesion is at the heart of a resilient neighborhood and the City could help improve that cohesion through encouraging:

- Block parties that are more effective at building neighborhood connections. The recent “Get to Know Your Neighbor Day” is an example of the City’s attempting to promote activities that build relationships between neighbors.
- Developing neighborhood specific phone/text/email lists
- Simply doing ‘stuff’ together



Recommendations for Building a Resilient City: Infrastructure

The Committee makes the following infrastructural recommendations to improve resiliency in the City.

Protecting Fresh Pond from storm water intrusion

- Plan, budget, build and install a removable flood barrier(s) to span any low-lying gaps between Alewife Brook and Fresh Pond to keep flood water from getting into Fresh Pond. A possible model exists on the National Mall by the Washington Monument: <https://land-collective.com/projects/potomac-park-levee-national-mall/>
- When this removable barrier is created, practice installation every 6 months.

Reducing paved surfaces

- Create a Paving permit process
 - Require a permit before adding more than a de minimus amount of impermeable paving on any residential or commercial space. This is already done elsewhere: <http://www.wytheville.org/townoffice/pdf/PavingPermit.pdf>
 - Encourage removal of paved parking areas by allowing an as-of-right replacement of paved parking within two years



Improving tree canopy based on future climate

- Cambridge is already doing a lot of work on tree canopy issues. These efforts should be as robustly funded and aggressively managed as possible. A significant challenge is understanding what trees to plant now that will flourish in our climate-changed future. Cities such as Baltimore face the same challenge and we should collaborate with them as we research this issue.

<https://www.cambridgema.gov/theworks/ourservices/urbanforestry/treeinventory>

Recommendations for Building a Resilient City: Policy

The Committee recommends making the following policy and ordinance changes a priority for the Council.

ZONING AND LICENSING CHANGES

- Green Roofs
 - Increase in FAR or height would be allowed by Special Permit as long as the green roof or other improvement
 - Decreases Urban Heat Island Effect; or
 - Decreases storm water runoff into the sewer system
- Battery Storage and onsite power generation
 - Allow, via special permit, onsite power storage and generation in setbacks, parking structures and similar locations as long as state fire and building code requirements are met.
 - Cambridge Fire Department and Inspectional Services Department should stay up to date on the most current thinking about fire safety and alternative energy generation and storage issues.
 - Provide automatic noise waivers for any backup generators that are operating in a health & safety capacity.
 - Review and, as needed, develop regulations to allow appropriate amounts of fuel to be kept on site for fuel backup generators.
- Flooding mitigation, notification and response plans must be reviewed as part of any Special Permit application for activities in 100 or 500 year floodplain or in any other area designated as being at risk of flooding by the City
 - One example of such a requirement is at http://www.water.ca.gov/floodsafe/docs/Flood-Risk-Notification-Program_Sep12.pdf
 - Public and private signage in parking garages and other flood prone areas would be prominently displayed.
 - Cambridge Fire Department would annually review its flood response plans, equipment and training in a public report to the City Council.
- Review all zoning permits and licensing requirements for their implications on resiliency, using guidance from organizations such as the Resilient Design Institute as examples.
<http://www.resilientdesign.org/the-resilient-design-principles/>

POLICY RECOMMENDATIONS

- Review licensing and permitting requirements for public events such as block parties to ensure that citizens find them as easy to organize as possible.
- Work with collective bargaining units, determine what, if any, specific resiliency-oriented training and responsibilities city staff should be expected to have.
- Formalize a review process for new technology and emerging trends to identify potential resiliency building strategies for Cambridge.
- Conduct an annual City-wide resiliency audit that is subsequently discussed at neighborhood meetings in the same manner as Somerville's ResiStat Program.
<https://www.somervillema.gov/resistat>

Related Documents and Resources

“Climate Change Vulnerability Assessment, Part 1.” Community Development Department, City of Cambridge, November 2015.

http://www.cambridgema.gov/CDD/Projects/Climate/~/_media/307B044E0EC5492BB92B2D8FA003ED25.ashx

“Climate Change Vulnerability Assessment, Part 2.” Community Development Department, City of Cambridge, February 2017.

http://www.cambridgema.gov/CDD/Projects/Climate/~/_media/F93208C3B12D4AACBD3E0F3A712F68C7.ashx

Cambridge Weekend Backpack Program. Food for Free.

<http://www.foodforfree.org/cambridge-weekend-backpack-program>

Mental Health First Aid. Cambridge Health Alliance.

www.mentalhealthfirstaid.org.

“Opioid Working Group Report: Addressing the Opioid Epidemic in Cambridge,” Office of Vice-Mayor Marc McGovern. City of Cambridge (Nov. 16, 2017).

http://cambridgema.igam2.com/Citizens/Detail_LegiFile.aspx?Frame=&MeetingID=1942&MediaPosition=&ID=5957&CssClass=

Climate Protection Action Committee. Community Development Department, City of Cambridge.

<http://www.cambridgema.gov/CDD/climateandenergy/climatechangeplanning/climateprotectionactioncommittee>

Appendix

The following reports from the Committee's monthly meetings are being submitted in a separate document. They are also available at CambridgeResiliency.Org.

March 29, 2016 Meeting
April 26, 2016 Meeting
May 31, 2016 Meeting
June 28, 2016 Meeting
July 26, 2016 Meeting
August 30, 2016 Meeting
September 27, 2016 Meeting
October 25, 2016 Meeting
November 29, 2016 Meeting
January 31, 2017 Meeting
March 28, 2017 Meeting
April 25, 2017 Meeting
May 30, 2017 Meeting
June 27, 2017 Meeting*

*Minutes for the June 27, 2017 Meeting are not available due to the theft of a computer on which the minutes were recorded.

References

- Cambridge, City of. "Climate Change Preparedness & Resiliency." November 2015. *Community Development Department*.
<http://www.cambridgema.gov/cdd/projects/climate/~media/307B044E0EC5492BB92B2D8FA003ED25.ashx>. 2017 December .
- CDD. *Demographics and Statistics FAQ*. December 2017.
<<http://www.cambridgema.gov/CDD/factsandmaps/demographicfaq>>.
- . *Middle-Income Rental Program*. n.d.
<http://www.cambridgema.gov/CDD/housing/forapplicants/middleincomerentalprogram>.
December 2017.
- DOE, Mass. "Next Generation MCAS Tests 2017: Cambridge." 2017. *School and District Profiles*.
http://profiles.doe.mass.edu/mcas/achievement_level.aspx?linkid=32&orgcode=00490000&orgtypecode=5&. December 2017.
- McGovern, Office of Vice Mayor Marc. "Opiod Working Group Report: Addressing the Opiod Epidemic in Cambridge." 2017.
<http://cambridgema.iqm2.com/Citizens/FileOpen.aspx?Type=4&ID=4182&MeetingID=1942>.