

WORKSHOP SUMMARY

SUBJECT: Cambridge Climate Change Preparedness and Resilience Public Workshop
DATE, LOCATION: April 12, 2017, Russell Youth and Community Center, Cambridge, MA
WRITTEN BY: Rebecca Gilbert and Ona Ferguson, Consensus Building Institute

The City of Cambridge, as part of the Cambridge Climate Change Preparedness and Resilience (CC Preparedness) project, held an Alewife-focused public workshop on April 12, 2017. The workshop was conducted to update members of the public about the City's climate planning activities since its previous workshop on March 17, 2015 and to discuss a framework for organizing and evaluating possible strategies for enhanced resilience in the Alewife area. The workshop was also a forum for participants to share their concerns about climate resilience.

Approximately 60 people participated in the workshop, which was facilitated by the Consensus Building Institute. The steering committee of City staff lead the project and Kleinfelder provided technical support. Workshop participants are listed in the appendix. This summary captures the themes of the workshop organized by topic. Workshop materials and project updates are available on the project website:

www.cambridgema.gov/climateprep.

Introduction and project overview

John Bolduc, Environmental Planner in the City of Cambridge Community Development Department, welcomed participants and highlighted the need to identify early actions and generate a realistic set of strategies to build climate resilience in the City. To achieve this goal, the City has undertaken three integrated initiatives: CC Preparedness, Envision Cambridge, and the Net Zero effort. The subject of this meeting was the CC Preparedness initiative, with a focus on the Alewife area.

The CC Preparedness objectives are to:

- Provide a vision of what a climate-resilient Cambridge will look like.
- Propose a realistic, effective set of strategies and recommended actions for the City, stakeholders, and community to implement.
- Engage the community to engage stakeholders and residents in the development of recommended actions.
- Focus on Alewife and The Port through early pilot studies for these areas.
- Program early actions in Alewife and The Port through early pilot studies for these areas.
- Develop a plan with integrated actions that increase preparedness and resilience at the building/parcel, neighborhood, citywide, and regional scales.

The City's vision for CC Preparedness is "to protect the lives and livelihoods of members

of the Cambridge community that are at risk from climate change impacts and, in the process, enhance the well-being of the Cambridge community.” Mr. Bolduc emphasized that this is a plan to protect *people* from the new risks they face from climate change, not a plan to protect the *environment*.

To inform the CC Preparedness Plan, the City is holding two public workshops focused on the Alewife area: this meeting and another in the fall. The City will hold public workshops for The Port area of Cambridge this coming winter or early spring 2018. The Alewife area and The Port were chosen as pilot projects for the CC Preparedness Plan because they represent two very different types of neighborhoods. The City hopes that developing strategies for these two neighborhoods will assist planners in crafting the citywide plan, which is slated for completion in 2018. When compared with the rest of Cambridge, the Alewife area has many critical assets, resources, and vulnerable populations at risk from climate impacts. The Alewife area’s history as a former wetland particularly contributes to its relatively high flood risk. In addition, the area’s significant current development makes it an excellent candidate for proactive resilience planning.

Mr. Bolduc concluded his overview of this initiative by providing an update on CC Preparedness related activities since the last meeting in summer 2015. The team has:

- Provided flood risk guidance to developers based on the findings of the vulnerability assessment.
- Worked to develop a tool to make vulnerability assessment findings more readily available.
- Undertaken public education and outreach.
- Engaged with the Metro Mayors Climate Preparedness Task Force.
- Engaged with state agencies including the MA Office of Energy and Environmental Affairs the MA Bay Transportation Authority, the MA Department of Transportation, and the Division of Capital Asset Management & Maintenance.
- Undertaken public engagement about the climate change-public health nexus.
- Submitted a joint grant application to the National Oceanic and Atmospheric Administration for watershed-wide resilience in the Lower Mystic River Watershed.

Vulnerability projections for the Alewife/Fresh Pond area

Mr. Bolduc briefly reviewed the City’s climate planning efforts to set the stage for a group discussion of the current approach to developing specific climate resilience strategies. He presented information from the Cambridge Climate Change Vulnerability Assessment (vulnerability assessment), completed in February 2017, which estimates the scale of several types of climate change-related impacts to the City over time using many assumptions. The vulnerability assessment had six key findings:

1. Economic losses from a flood event and/or an area-wide power loss would be significant.
2. More frequent flooding contributing to both poor water quality and indoor air quality are likely to become increasingly challenging public health concerns in the

- near future. Precipitation-driven flooding is a more imminent threat than storm surge-driven flooding.
3. Disruption of critical services and major infrastructure (electricity, transportation, water/wastewater) will have more impact on vulnerable populations who are more isolated due to infirmity, age or language, and those with lower incomes.
 4. Heat vulnerability is an imminent and growing risk to the community. By 2030, the number of days above 90 degrees Fahrenheit in Cambridge could triple. There will be more frequent and longer heat waves.
 5. Storm surge flood risk associated with sea level rise will probably arrive around mid-century and will represent a new type of flood risk in terms of its source, volume, and salt contamination. Storm surges from Boston Harbor will reach Alewife after 2030. Forecast models suggest storm surges will go around the Amelia Earhart Dam by 2045 and over the dam by 2055. These scenarios are expected to occur at the Charles River Dam about a decade later in each case.
 6. Many climate change risks are regional in nature, particularly sea level rise/storm surge flooding. Climate disruptions in other communities will impact Cambridge.

Overall, climate change will exacerbate current challenges (e.g. flooding) in the City. Mr. Bolduc emphasized that these projections show impacts as though no action will be taken by the City but there are preparedness and resilience actions that can reduce the City's risk. Mitigation measures globally to reduce or delay climate change will still make a difference. In light of these projections, the City is exploring what it can do now to increase its resilience.

Participants had comments and questions, grouped below by theme:

Clarity on vulnerability modeling and forecasts

Some participants asked for clarity on the timing and relative impacts of precipitation- and storm surge-driven flooding. They also wanted clarity on the role of the two dams protecting Cambridge and when those dams would cease to provide storm surge protection. Participants sought information on the data used in the vulnerability assessment. Mr. Bolduc said the City included a large number of factors in its modeling, including land subsidence and the impact of ice cap melting on ocean currents.

Land use development with climate projections

Participants expressed concern with the contradiction between the long-term climate change planning the City has undertaken and current development in the Alewife area. They suggested a need for more planning for transportation, green space, and other land use elements that could help address climate vulnerability. Mr. Bolduc said that development in the Alewife area was planned before the City's climate change planning started; the latter has only been happening for the last decade or so. Early resilience planning assumed that climate change could be prevented, which contributed to the City's current development plans. The City is now playing catch up with the science, the implications of climate change, and new planning considerations. Participants were also concerned that Alewife's past as a large wetland was not sufficiently taken into account during development planning. Mr. Bolduc noted that the City is concerned with two

categories of flood risk: storm surge and precipitation. Staff believe that storm surge risk is high enough that wetland flood mitigation will not be a major factor. Wetlands play more of a role in helping reduce precipitation-induced flooding. These concerns are part of an ongoing conversation as the City redevelops the Alewife Area, and City staff are making significant improvements to redevelopment planning now.

Storm water management

Some participants asked about long-term management plans for water in Cambridge. The City is looking to increase storm water storage capacity and pervious surface area in the Alewife area to address this vulnerability. There are constraints on what the City can do for water management due to the size of its underground water pipes. Mr. Bolduc noted that ongoing waterline construction on Huron Ave and Concord Ave is driven primarily by water quality requirements as well as some storm water improvements.

Regional collaboration

A participant asked for more information about what Cambridge is doing to address this issue on a regional scale.

City's approach to identifying resilience strategies

Approach

Mr. Bolduc and Kathy Watkins, City Engineer, presented the City's approach to identifying resilience strategies for building a climate-resilient Cambridge. These strategies will be key actions that will help people, communities, and businesses become more resilient to climate change generally and/or during disruption events. The team is working to develop Alewife resilience strategies to provide for:

- A. **A Prepared Community:** Strategies to strengthen community, social, and economic resilience. (e.g. Educate and train residents to prepare for climate stresses.)
- B. **Adapted Buildings:** Strategies to protect buildings against projected climate change impacts. (e.g. Design buildings to incorporate energy autonomy.)
- C. **Resilient Infrastructure:** Strategies to ensure continued service or a speedy recovery from community-wide infrastructure systems. (e.g. Protect Fresh Pond as the source of Cambridge's fresh water.)
- D. **Resilient Ecosystems:** An enhanced living environment integrating air quality, waterways, green infrastructure, and the urban forest as a system resilient to climate impacts. (e.g. Expand urban tree canopy.)

Evaluation

The City has developed a matrix that will help it make planning decisions. The team plans to evaluate the effectiveness of the proposed resilience strategies and select among them using seven criteria as well as other information such as enablers (e.g. owners, partners, financiers) and scale (e.g. parcel/building, neighborhood, city, regional). The seven criteria are:

- **Impact:** Is the strategy technically effective?
- **Affordable:** Is the implementation cost feasible?

- **Equitable:** Will the strategy be fair to all?
- **Wellness:** Will the strategy improve public health and safety?
- **Feasible:** Is the strategy politically, legally, and financially realistic?
- **Integrated:** Is the strategy aligned with Net Zero and Envision?
- **Sustainable:** Does the strategy mitigate climate change?

In addition to the seven criteria described above, the matrix includes timeframe as an additional evaluation criterion. Timeframe is defined in two ways: when strategy implementation will be required and when a strategy will yield results. These projections can help the City make decisions, but the planning team will still need to consider a strategy's temporal flexibility because climate impacts will keep shifting. For example, the City is considering the feasibility of installing a storm surge barrier and raising it at a later date using a phased-in cost investment.

Specific examples

The team reviewed Strategy Categories A (a prepared community) and B (adapted buildings) in greater detail to give participants a sense for how each of these strategy categories could be realized. For Strategy Category A, the team presented two examples:

- **Create emergency and disaster hubs:** Pilot hubs have been established in Vancouver, San Francisco, and elsewhere. The hubs offer resilience education and training, disaster preparedness and climate resiliency planning, disaster simulation exercises, and clean energy technical assistance. They can also serve as an emergency alert system, an expansion of emergency services, and a location to pre-position emergency supplies.
- **Create “cool” cooling centers:** Centers would be established in existing or new structures where people would want to spend time in during an extreme heat event or an extended heat wave. The City could partner with community organizations to engage residents through programming.

For Strategy Category B, the team presented two examples:

- **Retrofit existing building/parcel for enhanced flood protection:** Actions could include elevating or relocating utilities inside a building and installing green infrastructure such as a bioretention basin.
- **Design buildings that can adapt to projected temperature increases:** The City could encourage owners of existing structures to replace leaky windows and install reflective roofing materials. For new buildings, the City could consider implementing new building codes that encourage the use of passive design strategies with higher performance envelope requirements.

Discussion

Participants had comments and questions, grouped below by theme:

Resilient design

Participants expressed a desire to see the City approach Alewife development, and resilience at the citywide scale, with an eye toward sustainable design. The City should look to other countries and cities for best practices and innovative solutions but ultimately choose a design that feels like Cambridge. It should protect its existing natural

assets and incorporate them into planning. Participants frequently mentioned a need for more decentralized public spaces and parks.

Tenant-landlord considerations

Participants voiced concern about whether large corporate development companies and building managers in the Alewife area will comply with and adopt best practices given that these entities may be looking for fast profit and turnover. They said both communication from management companies to tenants and their response to building damage is often inadequate. There is a perception that owners want to get around this kind of planning when they can. Participants want to know what the City can do to help these buildings and their tenants prepare for future climate scenarios. Mr. Bolduc noted that motivating and requiring building upgrades in rental situations, or a mix of regulations and incentives, could be considered to encourage property owners to make efficiency improvements and increase building resilience. One participant suggested that the planning team look to behavioral economics research for ideas on incentivizing tenant-landlord change (see Dr. Cass Sunstein's work at Harvard).

Other comments

- *Communication* – The City should develop tools for communicating projected climate impacts to its residents in parallel with the resilience strategies presented by Mr. Bolduc.
- *Initiative consistency* – The CC Preparedness Plan's approach seems to be inconsistent with the Envision Cambridge approach. The City should prioritize community-wide resilience (e.g. water source protection) before addressing individual properties.
- *Water protection* – The City should plan to protect drinking water sources such as Fresh Pond in the event that nearby businesses (e.g. gas stations, biomedical companies) are flooded. One option would be to consider relocating these businesses.
- *Valuing public assets* – The Alewife area has very few public assets and very high property values. The City should value the public assets it does have and incorporate them into resilience planning.
- *New strategy* – The City should support urban agriculture and other community-led resilience efforts as part of Strategy Category A.
- *First responders* – Current traffic levels in the Alewife area, especially during rush hour, make first responders' jobs difficult. The City should address first responders in the CC Preparedness Plan.

Participant discussions and input

Participants worked in small table groups to discuss two key questions. Some community members submitted written answers to these questions through a handout at the meeting and on the City's website. All responses are grouped here for simplicity.

Question 1: *In a situation of increasing disruptions, who would people in Alewife turn to for help? What strong social networks exist already in the Alewife/Fresh Pond area?*

What else would strengthen the Alewife community?

Specific locations

- Hospitals (e.g. Santa Maria, Mount Auburn)
- Libraries
- Movie theaters (especially for heat events)
- Firehouses
- Local stores (e.g. Iggy's Bread of the World)
- Gyms
- Parks (e.g. Danehy Park)
- Fresh Pond Golf Club
- Senior centers
- Grocery stores (especially useful for communications)
- Swimming pools (especially for heat events)
- Schools (e.g. St. Peter's, Fairweather Street, John M. Tobin Elementary)
- Churches
- Existing community centers and public spaces (e.g. Russell Youth and Community Center)
- Cambridge Water Department (especially its upper floors)

Groups and organizations

- *Person to person* - Some participants mentioned a person or friends who they would turn to during a disruption event. These included friends who live at higher elevations in the City; a keystone community member or neighbor (i.e. the person who knows everyone); and a household that has a back-up generator, a wood stove or air conditioning. Participants also mentioned the idea of establishing a "buddy system" that residents could utilize during a disruption event.
- *Neighborhood resources* - Participants mentioned neighborhood organizations and tenant associations (e.g. Rindge Towers, Fresh Pond Residents Alliance) as resources in the Alewife area. For areas that do not have an existing neighborhood organization, the City could help to cultivate one. The City should reach out to these associations and engage them in resilience planning. Block parties or community-wide events like Somerville's PorchFest are another way to facilitate familiarity with neighbors and the City could look into providing planning and/or financial support for such events. Volunteer neighborhood organizers could also be cultivated by the City. Neighborhoods could be encouraged and supported to hold preparedness meetings to raise awareness of climate risks and communicate preparedness best practices. Another way to build neighborhood cohesion in large apartment buildings and complexes is to work with developers to include central community spaces for neighbors to gather and meet each other.
- *Churches* - Churches were cited by a number of participants as community hubs with well-established communication and personal networks and physical resources that can be utilized during disruption events.
- *Schools and universities* - Schools could be hubs of communication and function as a gathering place during disruption events. They are a key resource for families with children at the school and for people living around the school, although the

latter group might require enhanced outreach efforts. Many participants mentioned the John M. Tobin Elementary School by Fresh Pond as a good hub, although it may be subject to flooding despite some recent construction to address this vulnerability. Universities have even larger networks of facilities and people than secondary schools. The City could work with universities to develop them as resilience hubs.

- *Clubs* - Clubs such as garden clubs, sports clubs, and book clubs have established communication networks and support.
- *Informal communities* - Participants discussed the value of informal communities for resilience planning. Informal dog-walking communities can share information on a regular basis. Park users, such as Danehy Park users, include sports communities and dog-walking communities.
- *City resources* - Participants mentioned the importance of the City's website and how it would be an early resource they would turn to during a disruption event. The website should be a reliable resource that is updated regularly. The website could also be integrated with an electronic network resource such as NextDoor.
- *Electronic networks* - Participants mentioned two forms of electronic networks that could assist residents during disruption events: phone networks and online social networks. The City already provides a phone network and this asset could be advertised more widely. Online social networks designed for neighborhoods (e.g. NextDoor) can be a good resource for information sharing as long as there are no power outages. Huron Village already has a forum like this. This kind of platform could be used as people prepare for a disruption event and during the event.
- *Healthcare and social service providers* - The City could partner with healthcare and social service providers to identify populations at risk and develop specific resilience plans for these groups. Confidentiality issues, however, may pose some challenge to this collaboration.

Question 2: *What issues related to climate change resilience in the Alewife area are of most concern to you, your family, and your neighbors?* Participants' answers are grouped here by theme, with those responses that were offered most frequently listed toward the top:

- *Communications* - Participants are concerned with enhancing existing lines of communication to City residents. While there is strong interest in using online networks such as NextDoor, some are concerned with too much dependence on networks that require electricity. Participants expressed concern about communicating effectively with particular subpopulations in the City during a disruption event. These subpopulations include seniors, out-of-state students, those with limited mobility, renters, commuters, new arrivals, and those for whom English is a second language. All of these groups may need help understanding where places of safety can be found during an event, outreach to connect them with other communities, and place-specific disaster preparedness education. Specific proposed communication methods and tools included:
 - Produce signs that list the frequencies of radio stations giving public

- information (similar to what is seen on highways).
- Produce signs showing modeling-determined and City-defined “risk zones”.
 - Produce signs indicating evacuation routes and key emergency resources (e.g. heat shelter, fire department)
 - Design tangible illustrations of projected impacts (e.g. put indicators on houses representing water depths under different flooding scenarios).
 - Create a backpack program for school children that can distribute preparedness information to families.
 - Establish a reverse 911 that could be used to alert people to a disruption event and tell them where to find more information.
 - Include climate preparedness information in utility bills.
 - Require landlords to include general preparedness information and describe specific retrofits undertaken in lease agreements.
 - Establish a system for people to check in on neighbors and those who may require extra assistance during a disruption event.
 - Develop communication tools that can inform non-English speakers.
 - Develop a cell phone alert system.
- *Infrastructure* - Participants are concerned about specific infrastructure during flooding events. These include the Eversource substation, copper wires, drinking water reservoirs, communication systems, and subway stations. Some participants believe the City should take resident requests for a fiber optic network more seriously. As described above, protection of drinking water sources is a topic of particular concern. Participants are also concerned about the increased demand on the electric grid as the number of elevated heat days increases and residents turn on their air conditioning more often. Can the City plan for this increase by exploring and investing in renewable energy and distributed generation, microgrids, energy efficiency retrofits, and incentive structures for reducing electricity use?
 - *Lack of community* - A number of participants expressed concern that the City is losing its sense of community as its composition changes. They feel they are less connected to their neighbors and community now more than ever before. This feeling stems from rising property values that bring in wealthier families, high turnover rates in large apartment buildings, buildings built without community spaces, high rates of development, new resident populations, and neighbors who live abroad for much of the year. This sense of a lack of community enhances their concern about climate change.
 - *Cost and timing of retrofitting* - Participants are concerned with the cost, feasibility, and timing of retrofitting their houses and are looking for more information on this process. They want to know when they will start to see significant climate impacts to their property and the timeframe when retrofits should be completed. Tenants may require targeted communication on how to talk to their landlords about the expected impacts of climate change and the need for retrofitting.
 - *Development* - Participants expressed concern about the extensive development in the Alewife area, given the City’s already-high population and land use. They are

- concerned with how more residential buildings and more people will affect the area's resilience to climate impacts. Proposed responses ranged from implementing more rigorous planning regulations to a complete moratorium on new development in the Alewife area. The City knows the projected impacts of climate change to the Alewife area but it is not incorporating those realities into its long-term plans. Some participants believe the City needs to prioritize the safety of its residents over the income stream generated by rapid development.
- *Prioritization* - Some participants believe the City needs to start prioritizing its preparation activities. Top priorities mentioned were protecting the water supply, enhancing communication networks, installing air conditioning in public buildings, building knowledge and capacity for residents to take care of themselves during a disruption event, improving traffic design for emergency responders, and reducing the urban heat island effect by planting more trees.
 - *Inclusion* - Participants believe the City needs to consider how it plans for and reaches out to vulnerable populations, particularly low-income and immigrant communities. For example, the City should consider placing cooling centers near low-income communities that may lack air conditioning or improve its outreach about rebates for energy efficiency improvements. The City could explore partnership opportunities with social service providers to better serve these communities. Participants are also concerned that recovery costs after a disruption event could price certain communities out of Cambridge if the City does not plan for this possibility. The City needs to improve its outreach to these communities during the CC Preparedness Plan development (including targeted advertising for public meetings) and address their needs in the report.
 - *Property values* - Participants voiced concerns that property values could change as the City implements its resilience plan and climate change advances. Homes whose owners can afford to make improvements (e.g. move the water heater above flood level, install air conditioning) could retain their value while homes whose owners cannot afford this work could lose value. New zoning standards could also impact property values. Participants are also concerned about how property values could change depending on how the City communicates climate risks to buyers and where the City chooses to implement the strategies presented tonight.
 - *Regional planning* - Participants expressed a desire for enhanced planning coordination between Belmont, Arlington, and Cambridge. These relationships are not as robust as Cambridge's relationships with Somerville or other communities closer to downtown Boston.
 - *Water quality* - Participants are concerned about contamination of Fresh Pond and other reservoirs during flooding events. Properties such as Danehy Park (a capped landfill), gas stations, and biomedical facilities could also contribute to contamination of flood waters. Cleaning up other places such as Jerry's Pond and Little River could help protect City water.
 - *Role of large institutions and corporations* - A participant expressed a desire for large institutions such as universities and large corporations within the City to take a more active role in planning for climate resilience and fundraising for resilience improvements.

- *Big picture* - Participants are concerned that the City is focusing on development and property owners too soon in this process. The City should look at the Alewife area holistically. It should relax the notion of fixed elements (e.g. quadrangle, roadways) during the planning process so that bigger picture solutions become possible. The City and its residents need to remain conscious of the scales we are focusing on.
- *Food security* - Participants cited food security during a disruption event as a cause for concern.
- *Public health* - Participants are concerned with the long term health and well-being of their children and their community.

Appendix A: Participants, Project Staff, and Group Facilitators

Participants

Name	Affiliation (if noted)
Nick Alexander	Citizen
Carol Lynn Alpert	Resident and Museum of Science
Franziska Amacher	
James Butler	
Dennis Carlone	City Council
Renee Caso	Neighbor
Katharine Davis	Resident
Susan DeAngelis	Citizen
Jan Devereux	Resident and City Council
Nina Dillon	Mothers Out Front
Ham Esok	Resident
Helen Fairman	Resident
Alison Field-Juma	FPRA
Robert Filene	Resident
Susan Filene	Resident
Madeline Fletder	Resident
Terry Greene	Resident and Consultant
Nancy Hammett	
Adam Hasz	Student at MIT DUSP
Raminta Holden	Resident
Margo Jay	
Kent Johnson	N. Cambridge neighbor
Peggy Lenart	FPRA
Paul Lenart	FPRA
Zeyneb Magavi	Mothers Out Front
Ellen Mass	
Kelley McGill	Employee at Cambridge business
Katie Moniz	
Charles Morris	Neighbor
Jess Nahigian	City of Cambridge Strawberry Hill Resident
Harold Nahigian	Resident
Mike Nakagawa	FPRA, NCSC, Alewife Neighbors
Jim Newman	Resident and Linnean Solutions
Michelle O'Donnell	Employee and resident
Hannah Payne	City of Somerville
Bill Pisano	Resident

Abigail Regitsky	Resident
Marietta Sbraccia	
Sarah Slaughter	Resident
Lois Stanley	Resident
Martha Sterns	Citizen, Carl's Plant and Garden Club
Erik Thureson	
Sally Watermulder	Resident
Jordan Webster	
Carol Weinhaus	Resident
Martine Wong	Employee and Belmont resident
Zia	

Project Staff and Facilitators

Name	Affiliation
Nathalie Beauvais	Kleinfelder
John Bolduc	City of Cambridge
Bronwyn Cooke	City of Cambridge
Iram Farook	City of Cambridge
Ona Ferguson	Consensus Building Institute
Indrani Ghosh	Kleinfelder
Rebecca Gilbert	Consensus Building Institute
Julie Herlihy	Consensus Building Institute
Sam Kumasaka	Consensus Building Institute
Owen O'Riordan	City of Cambridge
Kari Sasportas	Cambridge Public Health Department
Kathy Watkins	City of Cambridge