

City of Cambridge  
Climate Protection Action Committee  
**Minutes**  
December 12, 2015  
City Hall Annex

*Attendees:* Lauren Miller (chair), Johanna Jobin (vice chair), Lyn Huckabee (secretary), Rosalie Anders, Sarah Brylinsky, Tom Chase, Peter Crawley, Keith Giamportone, Shawn Hesse, Sarah Kennedy, Ted Live, Kris Locke, Sarah Mandelbaum, Chris Nielson, Paula Phipps, David Rabkin, Keren Schlomy; *staff:* John Bolduc, Bronwyn Cooke

*Guests:* Owen O’Riordan, Commissioner of Public Works; Kathy Watkins, City Engineer; Peggy Barnes Lenart

**Approval of Minutes**

- The minutes for November 12 were approved subject to inclusion of David Rabkin as an attendee and suggested edits from Shawn Hesse.

**Climate Change Vulnerability Assessment – Storm Surge Modeling**

John introduced the conversation:

- The storm surge modeling results were presented at a public meeting last week.
- The study thus far has been devoted to “assessment” – determining what we can expect from the climate in terms of heat, precipitation, sea level rise and storm surges, and the consequences of these phenomena. The next step, will be preparedness planning.
- The assessment has modeled scenarios for 2030 and 2070, which in turn become the basis for planning. The models do not serve as predictions but rather as plausible worst cases based on scientific models. Assessing impact and developing preparedness plans serves as a “stress test.”

Owen presented, but Kathy and John answered questions and added thoughts:

- In thinking about precipitation-driven flooding, Owen refers to a storm in July 2010 in which 3.8 inches of rain fell in a single hour. But he noted that the climate is changing; so the past cannot be used as a reliable reference for what we’ll experience in the future.
- When considering flooding from sea-level rise and storm surge, there are two types of models:
  - Bathtub models: Which simply consider elevation and assume that water can flow anywhere below a certain elevation. They do not address obstacles that block the flow of water, the time it takes water to flow from place to place, and duration of an event such as a surge.
  - Finite element models, which model the flow of water over time. The Woods Hole Group used such a model, which actually can model the entire North Atlantic. Where needed (as in Boston, Cambridge, etc.) the model is quite detailed.

- The National Climate Assessment’s sea level rise curves were used to determine the amount of sea-level rise in our region in 2030 and 2070. And the report used the upper (worst case) models since our GHG actual emissions are also worst case.
- The analysis was done using Monte Carlo simulation, a technique that simulates thousands of different storms in our 2030 and 2070 scenarios. Those simulations are then used as a set to determine the likelihood of events such as flooding in different places around the City.
- Cambridge is highly dependent on two dams – the Charles River Dam and the Amelia Earhart Dam (on the Mystic River). The following two tables indicate the probabilities of flanking (water getting around them) and overtopping (water passing over them) in 2030 and 2070 for a “100-year storm” and a “500-year storm” in those years. (Note that since storms are predicted to become more severe, a 100-year storm in 2070 would be more severe than one in 2030.)

Charles River Dam: Date of Event (given sea-level & storm severity models)

Predicted date of event given modeled sea-level and storm severity	Flanking	Overtopping
100-year storm	2055	2065
500-year storm	2045	2050

Amelia Earhart Dam: Date of Event (given sea-level & storm severity models)

Predicted date of event given modeled sea-level and storm severity	Flanking	Overtopping
100-year storm	2045	2055
500-year storm	2030-35	2040

Conclusion: We could face issues with flanking events in as little as 15 years. The 2030 prediction of flanking the Amelia Earhart Dam for a 100-year storm leads to flooding in Sullivan Square, not in Cambridge.

- Owen showed us maps that showed likelihood of flooding in a given year. In 2070, for example, there’s a 20%+ probability of flooding in the Alewife area. There’s a relatively low likelihood of flooding due to storm surge alone for many areas in Cambridge but:
  - These maps and predictions assume that the dams are undamaged and that their pumps remain operational.
  - The maps show the likelihood of flooding during a one-year time period. The likelihood of a flood over, say, 10 or 20 years, is much greater.
- It’s worth noting that the models do take into account the fact that if the Charles River gets high enough, water can flow back through the storm sewers into parts of the City that otherwise would not be flooded. However, this was modeled separately for the 1% event.
- In summary:
  - The dams are very likely to protect Cambridge through 2030.

- 100-year storms are predicted to start overtopping flanking and overtopping the dams by 2070.
- The water from surges would likely be contaminated because storm water and sewage are not completely separated in Cambridge or in other cities around us.
- The earliest and most significant risks are for the Alewife area and for North Point. (Eastern Cambridge is more vulnerable to precipitation-driven flooding).
- The DCR is assessing the vulnerability of the dams and their systems. A report is due in April 2016.

John concluded:

- The models tell us about the probabilities of certain events like floods and water depths at points throughout the city.
- Then we need to examine the consequences of those events and think about preparedness by:
  - Considering best practices
  - Developing strategies at the building, neighborhood and city-wide scale.
  - We also need to think regionally, too.

Questions/discussion touched on:

- The use of diverting water into green space that can absorb it rather than out through storm sewers (useful perhaps, but doesn't provide enough capacity to eliminate the need for major improvements to storm sewers and sewer separation)
- After the West Cambridge sewer separation project is completed, the next project is likely The Port (formerly known as Area 4).
- Sewer separation helps reduce contamination and increases capacity to move storm water. But if other cities don't increase their stormwater carrying capacity, we can still have backups from them into our sewers. Area 4 can have flows coming from Somerville.
- We might want to prioritize community efforts that help residents work with each other. It builds resilience as well as capacity for community discussion when we need to work on big infrastructure projects.
- We are sharing our data, findings and models with other towns in the area and we're working closely with others (e.g., on the metro mayor's preparedness task force)
- The vulnerability study has done some analysis of economic impact, including flood damage to buildings (but not contents) and disruption of the economy, which we estimate at about \$43 million/day (far more than property damage). In preparedness planning, we'll analyze cost of proposed measures.

### **Director's Report**

John spoke in Susanne's absence:

- The city has issued Part I of the vulnerability assessment, which consists of a summary and 3 technical reports. Part II, to be issued in February, will apply the storm surge modeling results to assess consequence vulnerabilities.

- The water dept. has a new 170kW photovoltaic system. The city owns it and we're not selling the attributes of the power. The city has received a DOER energy resiliency grant to explore the feasibility of a battery system to power the water treatment plant's offices and labs in the event of a power failure. It won't be sufficient to run the water treat process itself, however. So if the battery storage system can be designed to fit with the facility, the solar PV system will be tied to it.
- The CEA is seeking block captains to help efforts to reduce energy consumption to support our effort to win the Georgetown energy prize. See the CEA website for more info: <http://cambridgeenergyalliance.org/winit>
- Cambridge is one of ten cities to have been selected for the Envision America program, which is based on Envision Charlotte. It's focused on building energy. The application was done through the Sustainability Compact. It will start with a 3-day workshop for Compact members to meet with people from other cities.
- The Glocal Challenge finals were held today (Dec 10). The competing teams developed plans to help Cambridge win the Georgetown Prize. The two top teams will be hired this summer to implement their plans.

### CPAC Work Plan

We followed up on last meeting's discussion of ideas for future CPAC work by doing a sticky dot exercise on the Committee's ideas. The table below lists the ideas and their rank per the sticky-dot exercise:

<b>Potential CPAC Goal</b>		<b>Rank</b>
1	Add numbers to CPAC Goals and Objectives where called for:	3
2	Contribute to climate change preparedness plan	9
3	Ensure Citywide Plan address climate goals and objectives	1
4	Develop case studies of net zero strategies for existing buildings	9
5	Develop plan/outreach to make CPAC more representative of the community/increase diversity	5
6	Develop concept for how to balance and reconcile conflicting community goals for local carbon offset fund	12
7	Identify and develop higher level strategies that are not being considered or pursued in Cambridge	12
8	Organize CPAC subcommittees to engage different stakeholders, legislators, and state officials	12
9	Enable CPAC members to be more pro-active on issues through advocacy	7
10	Organize CPAC's role in monitoring and facilitating the Net Zero Action Plan	5
11	Review status of CPAC goals and objectives	9
12	Identify issues involving utilities (e.g., data, net metering policy, gas leaks, etc.) and develop recommendations	10
13	Develop actions for ecosystem services – tree cover, landscapes, water	7
14	Develop recommendation on green roof ready structures	18
15	Work on big issues that need deep dives, such as low carbon energy supply, electrifying buildings, etc.	4

16	Develop approach to setting community GHG reduction target – should it be aspirational or science-based	9
17	Develop forum to engage with other communities and their climate advisory committees	2
18	Work on supporting the Green Line Extension and making it resilient and efficient	10
19	Develop objectives for goal 1 on minimizing GHG emissions	12
20	Follow up on BEUDO	18
21	Review climate change vulnerability assessment	12
22	Develop recommendation on municipal procurement to facilitate use of products and services from innovative startups and incubators	12

### Member Reports

Committee members mentioned several pieces of news:

- Jim Newman and Mark Ginsberg presented at the USGBC Greenbuild conference in November on community planning, specifically on strategies for resilience in new and existing affordable housing projects. <http://greenbuildexpo.com/Attendee/Schedule/SessionDetails/34937>. They will be providing a report.
- There will be a climate rally on Saturday (12/12) at the Boston Common.
- There is a showing of “This Changes Everything” coming up on January 10 at the First Church. <http://masspeaceaction.org/events/tce-jan10>
- The MA state-wide energy efficiency 3-year plan will go into effect in January. It includes efforts to start a program for renters as well as new MassSave incentives for oil-heated multi-family homes.

The meeting ended at 8pm.

*Meeting notes by David Rabkin*