



City of Cambridge

IN CITY COUNCIL

October 31, 2016

*HEALTH AND ENVIRONMENT
COMMITTEE MEMBERS*

Councillor Jan Devereux, Chair

Councillor Dennis Carlone

Councillor Craig Kelley

Vice Mayor Marc C. McGovern

Councillor Timothy J. Toomey, Jr.

The Health and Environment Committee held a public hearing on Wednesday, September 28, 2016, at 3:33 P.M. in the Sullivan Chamber.

The purpose of the hearing was to discuss the ongoing drought and the impact on the Cambridge water supply, what restrictions on water use may be appropriate to consider and what public outreach is needed on water conservation measures.

Present at the hearing were Councillor Devereux, Chair of the Committee, Councillor Carlone, Richard Rossi, City Manager, Lisa Peterson, Deputy City Manager, Louis DePasquale, Assistant City Manager for Fiscal Affairs, Sam Corda, Managing Director, Water Department, Owen O'Riordan, Commissioner, Public Works Department, John Nardone, Assistant Public Works Commissioner of Operations, Sam Lipson, Director of Environmental Health, Public Health Department and City Clerk Donna P. Lopez.

Also present were Maggie Booz and Florrie Wescoat, Co-Chairs of the Public Planting Committee, Paula Phipps and Alison Field-Juma.

Councillor Devereux convened the hearing and explained the purpose. She stated that the hearing was being audio and video recorded. An agenda for the hearing was distributed (**ATTACHMENT A**). Public comment will be done at the end of the presentation. She stated that there has been a lot of media coverage about the severe drought caused by little snowfall last winter and the record-setting hot and dry summer. This is the area's worst drought in a decade and it is expected to continue for many months. Other communities have instituted emergency measures, including water restrictions. This hearing was called to allow staff to update the committee on the status of Cambridge's water supply and conservation measures, and to discuss plans to address the impact that climate change will have on our water supply in the future. She spoke about climate oddities, such as hot periods where the rain may bypass a community. The urban heat island effect can mean that the heat from paved surfaces and buildings radiates and if there is a storm passing it will rain where there is more green space.

The committee proceeded to hear from Deputy City Manager Lisa Peterson. Ms. Peterson stated that September is an important time to get an update on this. The system is typically recharged at this time. She introduced Mr. Corda to explain the water system, the drought projects and impacts, water conservation strategies for moving forward and fiscal issues.

Mr. Corda gave a slide presentation (**ATTACHMENT B**). He stated that Cambridge has a twenty-four mile watershed. He stated that total capacity of the Hobbs Brooks Reservoir is 2.5 million gallons when full; Stony Brook Reservoir is about 400 million gallons. He stated that there is a 7.5 mile conduit that brings water into Fresh Pond. He stated that Fresh Pond has 1.5 billion gallons of storage. The elevation of the water level is maintained at Fresh Pond at 15-16 feet to protect the reservoir from infiltration. He stated that at Hobbs Brook Reservoir the recharge cycle starts in September and goes through the winter, but there was no recharge this September because of the long drought. There has been only an inch of rain this month.

Cambridge's system is unique. The system has an 8-month supply when the system is full. The system can fill quickly compared to other systems. Even so, the City cannot withstand a record drought, which the current conditions may be. It is difficult to do long-range planning because conditions change. He gave statistics for Cambridge: the average daily demand has decreased since the 1970, even as the population has increased and with more commercial development. Cambridge water use has declined 10 million gallons per day over the last 45 years. He stated that this has been, in part, the result of an automatic daily meter reading program to quickly detect leaks. He added that the Cambridge Energy Alliance encourages water conservation and that appliances are becoming more water efficient. He spoke about water conservation efforts with MWRA. He stated that the average residential gallon per capital water use is 52-46 for the last six years. He stated that the City has done a water audit. All accounts are metered, but some water loss still cannot be accounted for and the City is working to get the unaccounted water down to a minimum.

While Cambridge has its own water system, the City is a full member of MWRA, which allows us flexibility in a time such as now. MWRA water is also used as needed during street construction projects. Cambridge follows the MWRA drought management plan, which is a safety net for the City. Mr. Corda spoke about the cost to the City of buying MWRA water. He stated that precipitation from May-August 2016 was several inches below the record low. He mentioned that the recent increase in rain in late September is not adequate to recharge the supply. The amount of rain remains 3 inches below the average for September. He stated that the forecast from the National Weather Services does not predict adequate rainfall this fall to recharge the reservoirs. We would need to get 9-12 inches of rain over a 4-week period to get back to a normal condition. He stated that the last major drought was in the 1960s and Cambridge needed to purchase water from the MWRA. He stated that this year the City started out with a deficit of 400 million gallons below full capacity. In July, the Water Department started looking at the capacity weekly. There has been no recharge in September and the drought is continuing, making this a very serious situation. The MWRA is at 84% of capacity.

Mr. Corda spoke about conservation. He stated that about 2 days of water can be saved through conservation efforts. Cambridge does not see a lot of outdoor watering unlike some suburban towns. Outdoor demand for water declines from September to October. Water conservation information has been spread through social media. The Water Department's webpage is being updated weekly with information about the drought and conservation. He spoke about the graph with the water cycle. All indicators are that we are in a drought status and it will continue based on the prediction. He stated that the City needs to analyze what more aggressive measures it can take.

It is a foregone conclusion that the Cambridge will have to purchase MWRA water, which is twice the cost of Cambridge's water. There will be a budget impact. He spoke about managing the next 12 months of drought conditions. He explained the strategy going forward and strategies that will be pursued to save water. He spoke about the minimal use of MWRA water supply and to maintain the reservoir system and the plant's operational status. He stated that the City needs to water to maintain recreational fields that we have made significant investments in. Dry, hard-packed playing fields also put athletes at greater risk of injury. He stated that Cambridge's water system and plant system need to continue to be used so that there is no damage to them due to inactivity while MWRA water is also used. He stated that the cost of MWRA water and the revenue loss may impact the water rate in FY 2018.

Mr. DePasquale stated that the annual water budget is \$20 million. In FY 2015 the Water Fund balance of \$11.7 million the highest in the history of the City; up from \$5.4 million in 2006. He stated that the fund balance was 60% of the total operating budget. Over the last two years \$3 million has been used from the fund balance for significant energy-saving improvements at the Water Treatment Plant. He stated that at the end of 2015 the fund went from \$11.7 million to \$10.3 million. In the current budget year the ending fund balance would be \$3 million. The fund balance is used to help when needed as situations arise, such as the current drought. He stated that the City had not anticipated this situation. He explained that if the City goes on MWRA Water, effective in October at \$1.2 million per month, FY 2017 water costs would increase by \$10.8M. This is a 54% increase on a budget that has already been approved.

He explained how this unanticipated \$10.8 million shortfall could be funded. He stated that \$4 million could be withdrawn from the water fund balance, but this still would leave a shortfall of \$6.8 million. He stated that he has discussed this with the finance team. Even though the Water Fund is a separate fund, it is part of the General Fund, and free cash can be used to help close the gap. He stated that free cash has never been used to help fund the water rates and that the City has never faced anything like this before. He stated free cash and the water fund may be used as an appropriation to do this. He spoke about considering a midyear rate increase in December. This would need to be announced before December so that it could go into effect for the second half of FY17. This would result in sharp midyear rate increase for consumers. He stated that the City instead will recommend a free cash/water fund appropriation based on what is needed. Then the City needs to focus on developing the FY 2018 budget and with a rate reflective of staying on the MWRA water well into 2017. If the City stays on the MWRA system this would be a \$14.4 million budget increase, which would be 75% over the current budget that would need to be raised from the water rate. The fund balance will be down to \$4 million. He said that Cambridge is in a financial position to cover the gap without increasing the water rate midyear. He added that the following year could be difficult. Mr. Rossi stated that the City has tried to never artificially run up the fund. If this can be corrected this year the fund will be increased to protect the City. The time has come to reassess where this fund should be.

Councillor Devereux stated that the situation seems more serious than it was even two weeks ago when she scheduled this hearing. She asked for confirmation that if MWRA water was used, \$4 million would be taken from the Water Fund balance and \$6.8 million from free cash to avoid a midyear water rate increase; that would leave a balance of \$4 million with a plan to build up the water fund again. Mr. DePasquale stated that this is the plan that is currently being discussed. Councillor Devereux stated that it is important to get this message out to residents immediately that their water may become more expensive so that they will become more conservation-minded.

Councillor Carlone noted that people outside of Cambridge pay more for water than Cambridge. He asked why the price of water is less in Cambridge. Mr. Corda stated that the MWRA has expended \$8 billion to upgrade their water system and \$1 billion on the waste water system and this is the reason the cost of MWRA water is higher. The MWRA system is a large system and covers a lot of ground space. Mr. Rossi stated that the makeup of the MWRA rate is inflated with debt from these capital projects. The water rate in Cambridge is set to keep supporting only the water system. He stated that the City will be thankful that the sewer system is upgraded as well as the treatment plant. He noted all the recent upgrades in the Cambridge systems. It is more efficient to run a smaller system, like Cambridge's system. Mr. DePasquale stated that this is only impacting the water portion of the water/sewer bills. Councillor Carlone stated that the way this situation is explained in the next water bill is important. He stated that he forgot Cambridge pays less for water than for sewer. He noted that the sewer cost of the water/sewer bills is higher. He was told that the water level at Hobbs Brook is very low. Mr. Corda explained the reasons that the Water Treatment Plant must be kept operational when we are using MWRA water. The plant needs to be maintained even at a low capacity. If the MWRA system went down Cambridge's system will be important. It takes time to get the system back on line if it is shut down.

Councillor Devereux stated that the MWRA provides water to other communities who are also experiencing severe drought conditions; will the MWRA increase its rate? Mr. Corda stated that

Cambridge will be charged the commercial rate but does not pay any fees. Even though the MWRA is significantly below its capacity our use will not jeopardize their ability to meet everyone's demands. Mr. Rossi noted that the City should not give up its membership in the MWRA system. Mr. Corda stated that Cambridge has used MWRA recently on a construction project and the water quality is the same as Cambridge's. Councillor Devereux asked if new construction require low-flow toilets as a means of water conservation. Mr. Corda stated that he believes that the Plumbing Code requires this. Mr. Rossi stated that with all the growth and construction in the City the City uses less water than 20 years ago. Cambridge residents try to conserve water.

Councillor Devereux asked about the major renovations to some of Harvard University's dorms and the impact on water use. Mr. Rossi noted that the two largest water users and payers of water in the City are Harvard University and MIT. Councillor Carlone commented that the water usage went up the last three years Mr. Corda spoke about the treatment of water and the distribution plant cost of \$1700-\$1800 per year versus the MWRA cost of \$3,500. Mr. Rossi asserted that more people are buying bottled water and this is one reason that consumption is lower.

Mr. O'Riordan spoke about watering on public property; 97 facilities are irrigated by Public Works. There are 22 water play features in parks and 50 water fountains. There is \$100,000 in the FY 2017 budget to begin to look at an automating our irrigation systems and DPW will ask for this amount for the next 5 years. This will enable the City to turn off the system remotely to save money and water. It is important to irrigate the fields in October. Water play features in the playgrounds consume significant amounts of water and frequently get clogged and require repair. He spoke about curtailing the use of water play features. Bubblers do not consume a lot of water. He spoke about maintaining the urban canopy and said that we have been aggressive about watering 1,000 recently planted trees, which take 20 gallons each every 5-7 days. He would not recommend decreasing the watering of the new trees as a watering saving measure, however, because the urban canopy is important to maintain for shade. He spoke about possibly reducing the number of hanging baskets in areas like Harvard Square because they require more frequent watering (3 times a week). He stated that at the end of the century New England will experience medium drought conditions. Councillor Devereux asked if the City fleet is washed. Mr. O'Riordan responded that the City does have a car wash at Public Works, which is used most frequently for garbage trucks.

Mr. Lipson stated that the Health Department prepared a memo on the potential impacts of drought on community health (**ATTACHMENT C**). He spoke about individual health effects and the overall health impact. The supply of good drinking water is very important to maintaining the public's health. The first impact of a drought will be dehydration because the body uses more water in drier weather. Elders, children and people with chronic conditions are most at risk of dehydration during a drought. General heat effects go together with drought conditions. He spoke about health effects caused by extreme heat. He stated that the CDC addressed the danger that droughts pose when playing fields become very dry, placing people at risk of injury from falling, and increasing pollen levels, and producing asthma conditions for people with respiratory issues. He spoke about air quality on a regional basis. HVAC systems can be effected with drought conditions. He spoke about trees, the benefit of the urban canopy and increasing the canopy means increasing the trees. Trees in drought conditions tend to be weak and vulnerable to disease. He explained that containers with standing water become more highly concentrated with proteins during droughts, creating conditions that are more conducive to mosquito breeding. Heat also drives mosquitos to breed more quickly and West Nile is a concern. He spoke about stress on people who work in agriculture and landscaping, whose work hours and pay may be reduced in times of drought. He spoke about the impact of drought on the quality of the produce grown in our region. He spoke about the health risk from bacteria in drought conditions.

Councillor Devereux asked if some of the problems with the bee population are caused by drought. Mr. Lipson stated that heat can cause stress on the bees. Councillor Devereux spoke about leaf blowers used in a dry conditions spreading even more dust and particulates into the air.

Councillor Devereux opened the hearing to public comment at 4:42 PM.

Alison Field-Juma, 363 Concord Avenue, spoke about the Cambridge reservoir system being low. She appreciated the information provided and the analysis done here. She stated that there is no "normal" year anymore due to the effects of climate change, so things need to be done differently. The state drought management plan is inadequate and needs a lot of work. She stated that Cambridge is ahead of the curve. She suggested that the City explore developing a "Net Blue" Ordinance, where there is no net increase in water use with new development. She spoke about requiring old, inefficient buildings to pay into a water fund. She stated that the state has talked more about the drought than the City has. She said that the reservoir is at 50% and asked what the percentage was in the spring and at what percentage would the City switch over to the MWRA? Cambridge is under the MRWA's drought management plan yet there has been no messaging to the public about the impact of the drought on our supply. She stated that next year the conservation messaging needs to be done in the spring when water usage is higher than in the winter. She spoke about the moral responsibility of all of us to save water even when we have the ability to meet our immediate needs through going on MWRA water. She suggested a public watering ban.

Florrie Wescoat, 33 Market Street, stated that she had not realized how extreme the drought situation is. She stated that the trees that the Public Works has watered look good (compared to others) and newly planted trees are an important investment to protect. She stated that it would be useful to review the tree species list to ensure that we are planting drought tolerant trees. She also spoke about reducing the watering for hanging baskets. She suggested planting species that are deep rooted, tough plants outside City Hall and using this as an education vehicle.

Paula Phipps, stated that she has watered the tree closest to her house. She noticed that the tree wells are tilted toward the street and the water is going into the sewer system. Tilting tree wells toward the trees is a permaculture solution. She spoke about low tech and low cost solutions. *"Water in plain sight"* written by Judith Schwartz is a book she recommends about techniques to keep water on the land.

At 4:56 PM Councillor Devereux closed public comment.

Councillor Devereux stated that she loved the idea of using the beds outside City Hall for plantings as a demonstration garden for annual plants. Deputy City Manager Peterson stated that people have asked for colorful flowers out front. Councillor Carlone stated that the key is to have a combination.

Councillor Devereux spoke about with the level of Fresh Pond being seemingly high and the disconnect that creates with the drought situation. She suggested an informational poster at Fresh Pond about the water level. She asked Mr. Corda if he knew the percentage of the capacity in the spring and now. Mr. Corda responded that in the spring it is 90% and now it is 25%. He stated that the City is at the minimum of where it wants to keep the plant running.

Councillor Devereux asked how the City Council can help with researching a Net Blue Ordinance. Mr. O'Riordan stated that he would get details to the City Council on how this works.

Councillor Devereux re-opened public comment for a late arrival.

Maggie Booz, 27 Long Street, stated that the city arborist said that the street trees that are best at surviving the drought are the large trees; medium sized trees were more susceptible; young trees need to be watered and cared for. During times of drought large trees should be preserved and should not be removed from the streetscape.

Councillor Devereux closed public comment.

Councillor Devereux stated that spring tree planting schedule had been delayed due to tree specification contract revisions. She asked about the fall planting schedule. Mr. O'Riordan stated that the fall planting will be smaller due to the drought. He stated that a larger spring planting in 2017 would be challenging

for the staff to manage. Councillor Devereux requested a monthly update to the City Council about the drought situation.

Councillor Devereux thanked all those present for their attendance.

The hearing adjourned at 5:02 P.M.

For the Committee,

Councillor Jan Devereux, Chair
Health and Environment Committee