



City of Cambridge

Executive Department

YI-AN HUANG
City Manager

CMA 2026-189
IN CITY COUNCIL
June 22, 2026

To the Honorable, the City Council:

Please see attached a memo from Mark Gallagher, Managing Director of the Cambridge Water Department, and Julie Wormser, Chief Climate Officer, relative to Awaiting Report 26-34 regarding a report on citywide water usage and water supply.

Very truly yours,

Yi-An Huang
City Manager





Date: June 22, 2026

To: Yi-An Huang, City Manager

From: Mark Gallagher, Managing Director Cambridge Water Department; Julie Wormser, Chief Climate Officer

Re: Response to Awaiting Report 26-34.

We are writing in response to AR 26-34: *That the City Manager be and hereby is requested to work with relevant City departments to do extensive outreach to residents, businesses, and property owners to communicate the current water level status and take all measures to reduce nonessential water use citywide, and provide a report on citywide water usage and water supply.*

Background

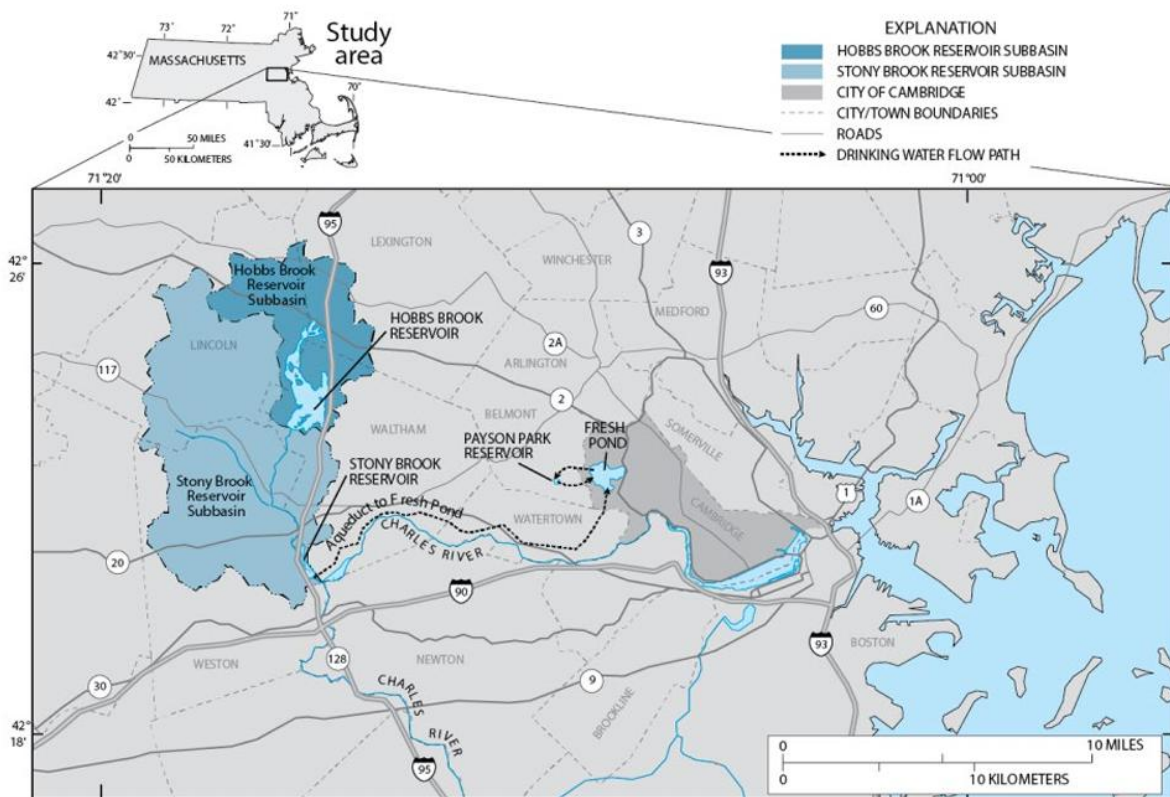
Given current and recurring drought conditions, on May 11, 2026, the City Council voted to:

- Communicate current water level status to all Cambridge water users, and
- Take all measures to reduce nonessential water use citywide.

This is the third annual Policy Order Response the Water Department has submitted regarding drought and water conservation and reflects real and growing concerns. Although we will describe the standard practices the City follows during state-declared drought conditions, we want to also discuss upgrades in how Cambridge budgets for and delivers water to increase the resilience of our local reservoirs to climate-driven changes in precipitation. Graphics in this document are from the final *Water Demand Projection Update* (December 2025) and draft *Updated Risk-Based Drought Management Plan* (March 2026) both written by CDM Smith for the Water Department.

Cambridge's Water Supply and Climate Change

Cambridge's water system consists of three reservoirs—Hobbs Brook, Stony Brook, and Fresh Pond—located within a 24-square-mile watershed in Cambridge, Lexington, Lincoln, Waltham, and Weston.



Source: USGS WRIR-00-4262 (Waldron and Bent 2001)

Figure 2.1 Cambridge Water System Map

Hobbs Brook and Stony Brook Reservoirs are both designated as Outstanding Resource Waters. Cambridge continues to make substantial investments in watershed land conservation to protect water quality and quantity, benefitting both aquatic and terrestrial biodiversity within the urbanized Rt 128 corridor. Fresh Pond is Cambridge’s terminal reservoir, holding water for the City’s treatment plant before it gets distributed.

When Cambridge’s water system was created in the mid- to late-1800s, Eastern Massachusetts saw rain on average every three days, consistent snow in the wintertime, and slower snowmelt in the spring. With a rapidly warming climate, the seasonality and intensity of our region’s precipitation is dramatically changing. More of our winter precipitation is falling as rain on frozen ground. Frequent lighter rainfall is being replaced by fewer stronger storms running off saturated and/or hydrophobic dry soils.

This new pattern of flash floods and flash droughts is threatening Cambridge’s local reservoirs, both as sources of potable water and as critical freshwater habitat. We are able to capture and store far less snowmelt and rainfall, leaving parts of Hobbs Brook Reservoir totally dry in late summer and fall when water demand exceeds replenishing rain. Such

low water levels increase water temperatures and decrease dissolved oxygen levels, negatively affecting aquatic ecosystems.

Until recently, major droughts were relatively rare. Our rain-fed reservoir system predictably provided abundant water and healthy aquatic habitat. In the fifty years between 1965 and 2015, Cambridge saw three major droughts. In the ten years since 2016 we have had five droughts, including our current drought that began in 2025.

Increasing Cambridge’s water system resilience will mean some combination of continuing to manage demand, increasing supply, and/or increasing storage. Cambridge residents already use far less than the state average (<50 gallons vs. 120 gallons per resident per day) and even consistently less than the state’s conservation goal of 65 gallons per resident per day (See Figure 3.4). Cambridge’s BEUDO regulation requires all large buildings to report on their water use to identify where more conservation is possible.

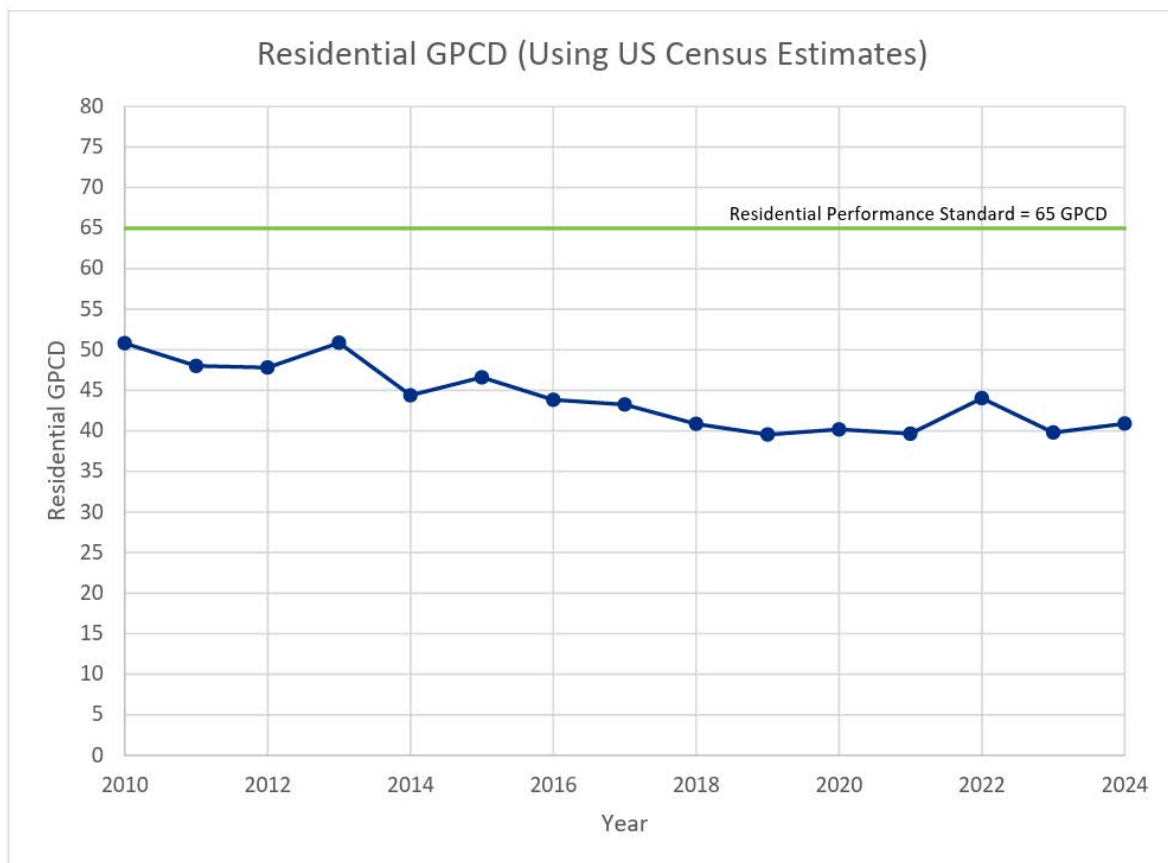
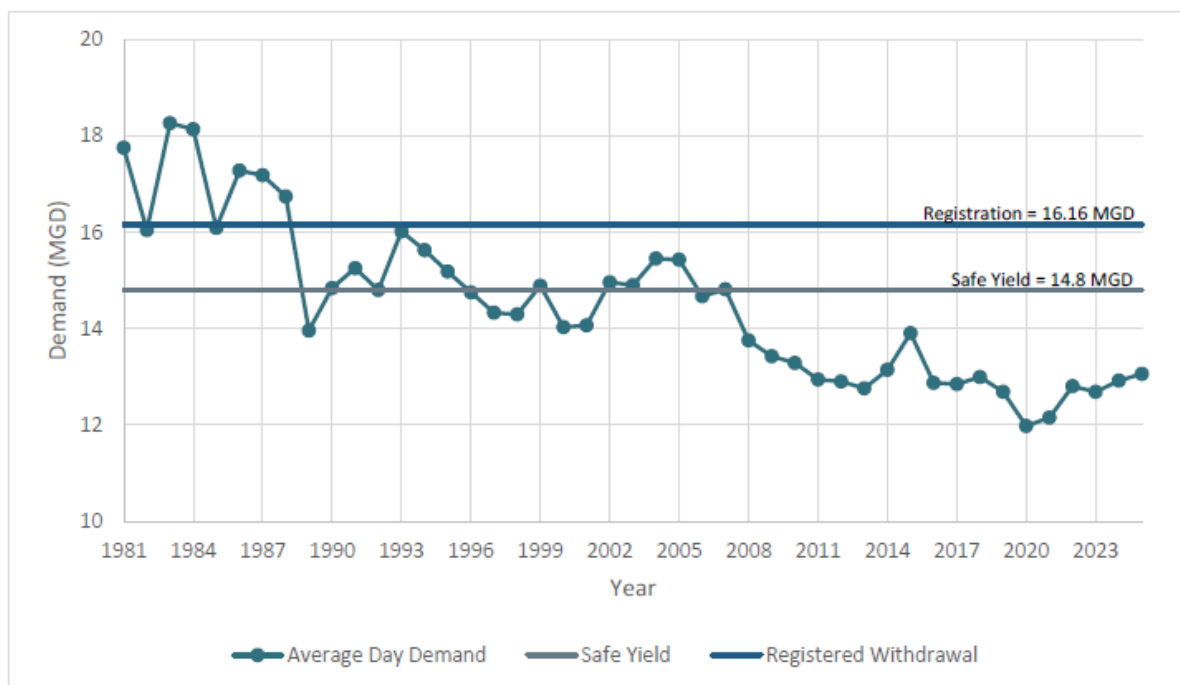


Figure 3.4 Historic Annual Residential GPCD

Indeed, since the 1980s, despite a population growth of ~18% the Water Department’s conservation efforts have resulted in a ~26% decrease in the average daily demand (See Figure 3.3) and has been consistently able to stay below what is considered sustainable levels of water withdrawals, predominantly through annual city-wide leak detection and repair, Distribution system capital improvement projects and public outreach.



Note: Registered withdrawal volume was established in 1989. Safe yield was estimated in 1991.

Figure 3.3 Historic Average Day Demands

Even so, the recent *Water Demand Projection Update* indicates that, beginning in the 2030s, projected residential and commercial development water usage increases could exceed what our reservoirs can dependably provide during drought conditions.

A major challenge is our inability to store water coming down as increasingly heavy rain. As well, increasing summer heat and drought conditions increase evaporation and coincide with peak water demands, further decreasing reservoir levels.

Our largest reservoir, Hobbs Brook, has 2.5 billion gallons of storage capacity but only four square miles of catchment area, as it is located near the top of a hill. Downstream Stony Brook Reservoir has only 400 million gallons of storage capacity within a twenty-square-mile watershed.

Hobbs Brook is no longer consistently fully recharging while Stony Brook spills almost 40 percent of the precipitation coming into the system directly into the Charles River to prevent overtopping and damage to the dam (see Table 3.6). Capturing more of the Stony Brook Watershed precipitation and storing it uphill in Hobbs Brook Reservoir is something that could be evaluated.

Table 3.6 Simulated Annual Total Inflow and Outflow Volumes for Typical Year (2019)

Water Budget Component	Annual Volume (MG/year)	Percentage of Inflows/Outflows (%)
Inflows		
Surface Runoff Inflows to Reservoirs	9,865 MG	89.9% of Inflows
Direct Precipitation to Reservoirs	918 MG	8.4 % of Inflows
Net Groundwater Inflows to Reservoirs	196 MG	1.8 % of Inflows
Outflows		
System Withdrawals at WPF	4,690 MG	52.0% of Outflows
Spills at Stony Brook Dam to Charles River	-3,417 MG	37.9 % of Outflows
Surface Evaporation from Reservoirs	-917 MG	10.2% of Outflows

In short, as climate change dramatically changes Eastern Massachusetts’ precipitation patterns and the City experiences substantial expected growth, we will not be able to prevent system shortfalls solely through decreasing demand. Maintaining a clean, reliable water supply—along with the ecological and recreational values our reservoirs support—will require significant changes to Water Department revenues, infrastructure, and use of MWRA water from the Quabbin Reservoir.

City Responses

This section begins with what the City is already doing to maintain a sufficient water supply during drought conditions. Following is a brief discussion of emerging strategies to optimize our water supply to manage changing precipitation patterns and more frequent droughts.

Public Outreach and Communication

The Water Department works closely with the Communications Department to issue public drought advisories, promote rain barrel use, and encourage general water conservation. This includes targeted outreach to Cambridge’s largest water users, civic associations, and City staff. Digital outreach generally reaches over 60,000 impressions through the City’s Daily Update (16,000+ subscribers), NextDoor alerts (33,000+

subscribers), and focused social media campaigns (approximately 10,000 views). In addition, every ratepayer receives physical billing inserts.

Interdepartmental Coordination

The Water Department meets with Cambridge Parks, Recreation (Fresh Pond Golf Course) Fire, and DPW Forestry and Construction, divisions to manage essential water use.

Regulatory Measures

An amendment to City Ordinance [13.08.090](#) was enacted on April 7, 2025, in compliance with the Water Management Act (310 CMR 36.07). This allows the city to enforce at a minimum the following restrictions on **non-essential outdoor water use**:

State-declared Drought Declaration Level	Public Restrictions	Fresh Pond Golf Course Restrictions
Level 1 (Mild)	<1 day/wk 5 pm-9 am; ornamental gardens can be watered by hand or with drip irrigation	Irrigation of fairways shall be reduced to 80% of normal, irrigation of roughs shall be reduced to 50% of normal, no irrigation of landscaping and ornamentals.
Level 2 (Significant)	Ornamental gardens can be watered by hand or with drip irrigation; all else banned	Irrigation of fairways shall be reduced to 60% of normal, irrigation of roughs and landscaping and ornamentals banned.
Level 3 (critical)	All nonessential outdoor water uses are banned	Irrigation of fairways shall be reduced to 40% of normal, irrigation of roughs and landscaping and ornamentals banned.
Level 4 (emergency)	All nonessential outdoor water uses are banned	Irrigation of fairways shall be reduced to 40% of normal, irrigation of roughs and landscaping and ornamentals banned.

Additional Climate-Ready Drought Responses

In 2016, the Water Department released Cambridge’s Water System Master Plan, including an audit to identify and decrease water losses. Since then, the Department has worked aggressively to detect and repair leaks, especially on larger water mains. The draft Drought Management Plan proposes the following demand-side strategies:

- Establish a drought planning team to forecast and respond sooner to anticipated shortfalls.

- Monitor trends in demand over the next 5 to 10 years and update if necessary.
- Allow Hobbs Brook Reservoir to fill to higher levels to store more water during rainy years.
- Continue to track the state regional drought level for the Charles River watershed and/or Middlesex County.
- Formalize protocols for implementing and enforcing nonessential outdoor water use restrictions in a document listing the communication platforms.
- Coordinate with facilities management or appropriate decision-making departments at large institutions such as Harvard and MIT so they can implement an irrigation policy in accordance with nonessential outdoor water use restrictions when they occur.
- Study the potential for drought pricing in terms of demand reduction.
- Evaluate the potential for rescheduling hydrant flushing during critical periods of drought

Proposed climate resilience feasibility study

The Water Department and Office of Sustainability partnered on a Municipal Vulnerability Preparedness grant proposal to fund a feasibility study to make Cambridge's water supply more drought resilient. If funded, this two-year study will build on CDM's reports to quantify the potential contributions of water conservation, increased reservoir storage, and/or new water supplies (e.g., Quabbin water or groundwater wells). The most promising solution(s) will be further developed in year two.

Aligning the Water Department's budget with projected expenditures

Currently, the Water Department is funded through revenues from selling water to residents and institutions. Because of this, water conservation during droughts actually decreases the Department's revenues just when Cambridge is most likely to need to purchase water from the Mass Water Resources Authority.

Eleven straight years without rate increases, dramatically lower revenues during COVID, and SCADA computer system and PFAS-related plant upgrades have drained Department reserves. The Department is working with the City's strategy team to examine ways of restructuring its revenue sources to eliminate such structural revenue challenges.