

**DRAFT**

## Vision for Sustainable Greater Boston 2050

### Water

In the year 2050 the Boston metropolitan area continues to be a “water rich” region, benefiting from more than 40 inches of rain per year. While the region still imports much of its water from the Massachusetts Water Resources Authority’s (MWRA’s) Quabbin Reservoir in the central part of the state, a new ethic has taken hold over the past several decades whereby watershed protection efforts have been adopted by communities throughout the region in order to protect and restore local rivers and streams as well as groundwater resources. Thus, the trend in the latter part of the 20<sup>th</sup> century to meet growing needs in the eastern part of the state by transferring increasing quantities of water from outside the region has been reversed.

Moreover, there is now broad appreciation of the need for natural flows to maintain important habitats, assimilate and breakdown waste, filter water, and regulate river flows and groundwater levels (referred to as “ecosystem services”). While the Ipswich and Upper Charles had experienced extreme low-flow conditions from the 1980s to about 2020, aggressive conservation programs and implementation of decentralized wastewater treatment technology in affected communities have restored groundwater levels and returned adequate flows to these previously distressed basins. In addition, reacting to strong efforts by watershed associations and citizens, Massachusetts has developed and implemented a comprehensive sustainable water resources policy. Among other aspects, the policy recognizes the importance of natural flows and includes a watershed permitting approach that protects such flows and establishes a framework to prioritize among competing uses.

As smart growth initiatives have taken hold over the early 21<sup>st</sup> century and population density has increased in inner core communities and regional centers, the ideal of suburban living with large well-watered and well-fertilized green lawns is a thing of the past. In its place is a desire for more compact, mixed use development, with smaller private lawns but greater access to public open space. Moreover, reflecting a broader appreciation of the value of water, the price of water has increased dramatically in recent decades. In communities throughout the region including those where large lots still exist, there has been a noticeable shift in landscaping from water-intensive lawns to xeriscaping, an aesthetic that includes planting native species that do not require frequent watering. As a result, outdoor water use, which previously accounted for a high fraction of summer water consumption and caused low-flow stress conditions, has been reduced dramatically. In addition, pervious pavement and rainwater harvesting, including the installation of green roofs, have become common practice for maintaining green space and urban gardening. These practices have also reduced urban runoff.

Over the past few decades a new generation of water conservation efforts has been implemented across all sectors. For example, once-through cooling systems for industry have been phased out, replaced by cooling towers or dry-cooling systems. At universities and other institutions as well as

public green spaces throughout the region that still require irrigation, native plantings and the use of grey water has greatly reduced potable water demand. With a new state plumbing code in effect, ultra low-flow fixtures, including dual-flush and waterless toilets, are ubiquitous in homes, offices, and businesses. Use of grey water for toilet flushing and other non-potable uses has also become common.

As a result of these developments, despite modest population growth over the past 50 years, overall potable water use in the region has declined by more than 40%. While residential water use still dominates consumption, it has fallen from about 80% of total demand to about 70%. Along with the decline in potable water use has been an even greater reduction in wastewater flows. As combined sewer overflows (CSOs) have been addressed throughout the inner core, and decentralized treatment has been implemented in several outlying communities, wastewater flows have been reduced by more than a third. The wastewater treatment capacity that has been in place since the early part of the century continues to be more than sufficient to handle flows, even in wet weather.

The various initiatives implemented in the first half of the 21st century — extensive conservation, decentralized wastewater treatment, rainwater harvesting, restoration of ecological flows — combined with the land use and transportation changes/accomplishments described elsewhere, have dramatically improved the quality of water in the region's rivers as well as in Massachusetts Bay. In fact, the Charles River and other rivers throughout the metropolitan region have been designated fishable and swimmable for more than two decades. As a result, water-based recreation has grown dramatically since 2010 and is a popular way to spend the increased leisure time that the region's population enjoys.

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