

Drought Management and Water Conservation in Massachusetts



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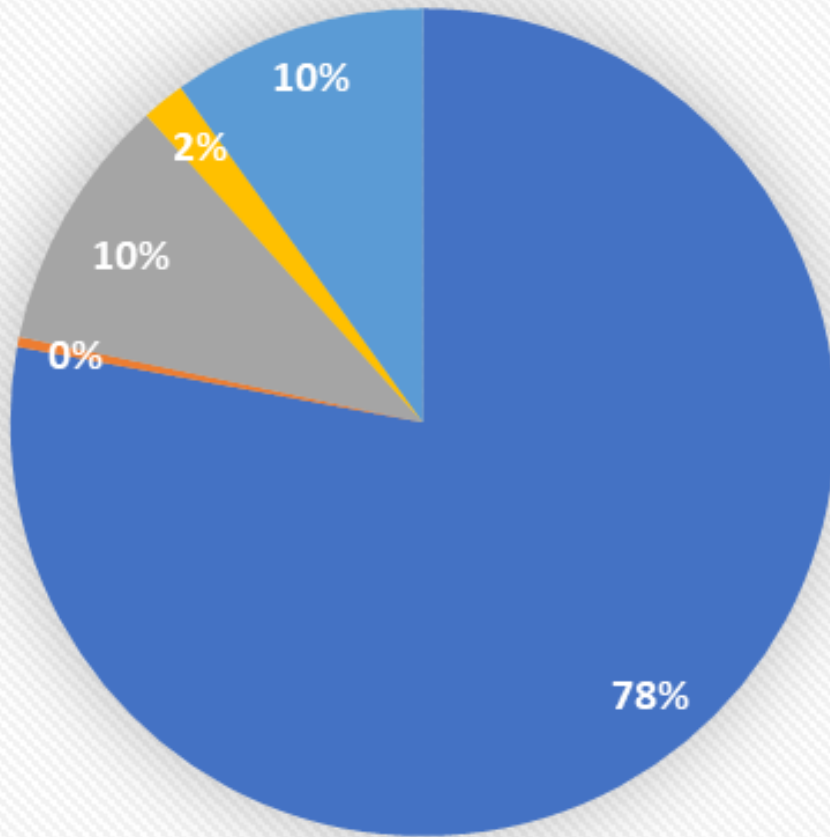
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Assistant Director of Water Policy

Executive Office of Energy and Environmental Affairs

MA Water Use Breakdowns

Registered/Permitted Water Use



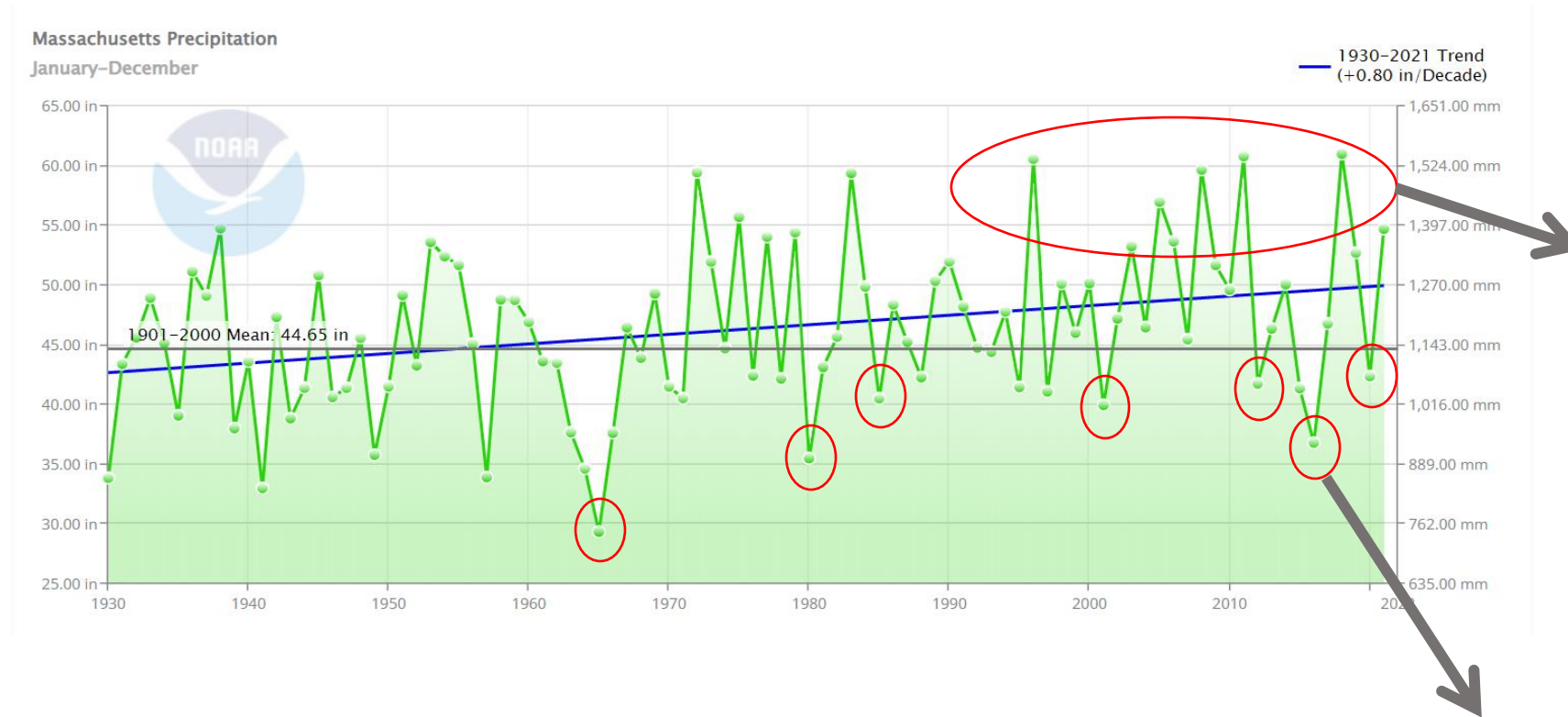
■ Public Water Supply ■ Agriculture ■ Cranberry ■ Golf ■ Other

Total Water Withdrawals (2015)

Surface water = 1,027 Mgal/d (73%)
Groundwater = 379 Mgal/d (27%)



Massachusetts precipitation trend 1930 to 2021

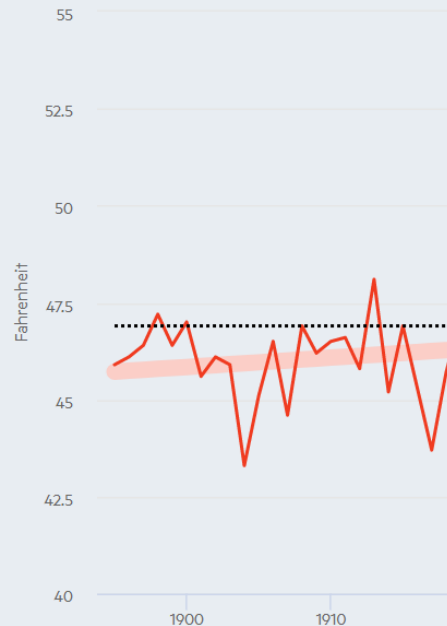


Location	2016 Water Year Precipitation (Inches)	Rainfall Departure(Inches)	Ranking Driest Water Year on Record(Preliminary)	Earliest Year of Record
Boston MA	29.73"	-14.04"	7 th Driest	1872
Amherst MA	33.78"	-12.24"	At least 9 th Driest	1902
Lawrence MA	29.46"	-22.15"	At least 6 th Driest	1893
Hingham MA	36.22"	-16.01"	4 th Driest	1960

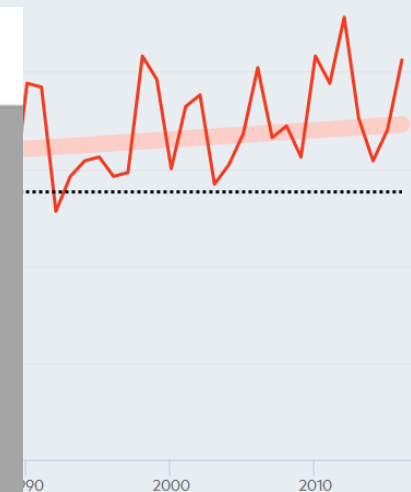
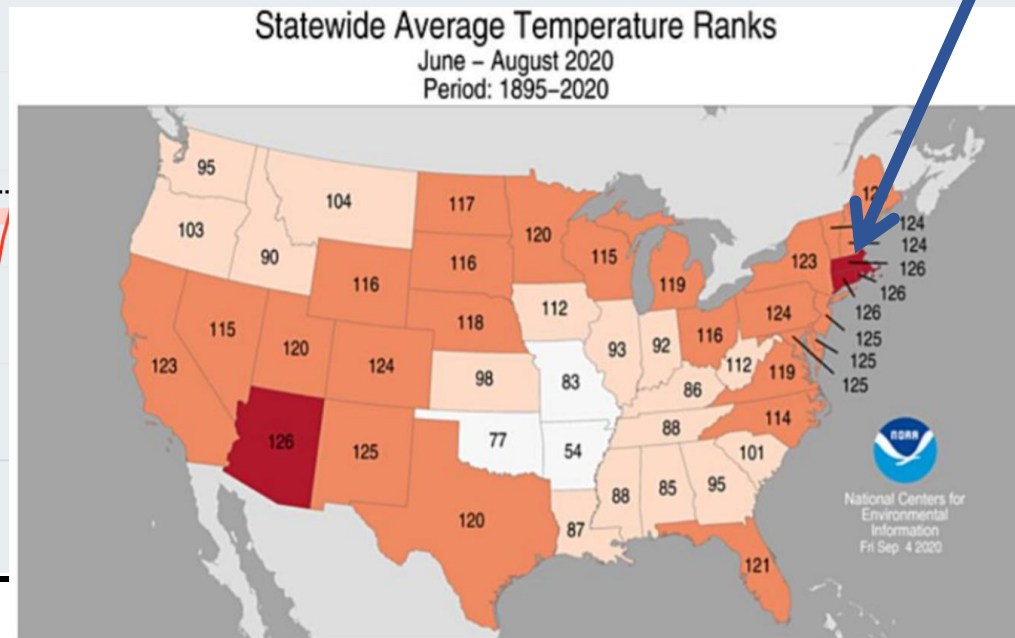
Massachusetts temperature trend 1895 to present

Annual Temperature Average

Massachusetts Boston* Worcester* Blue Hill Edgartown



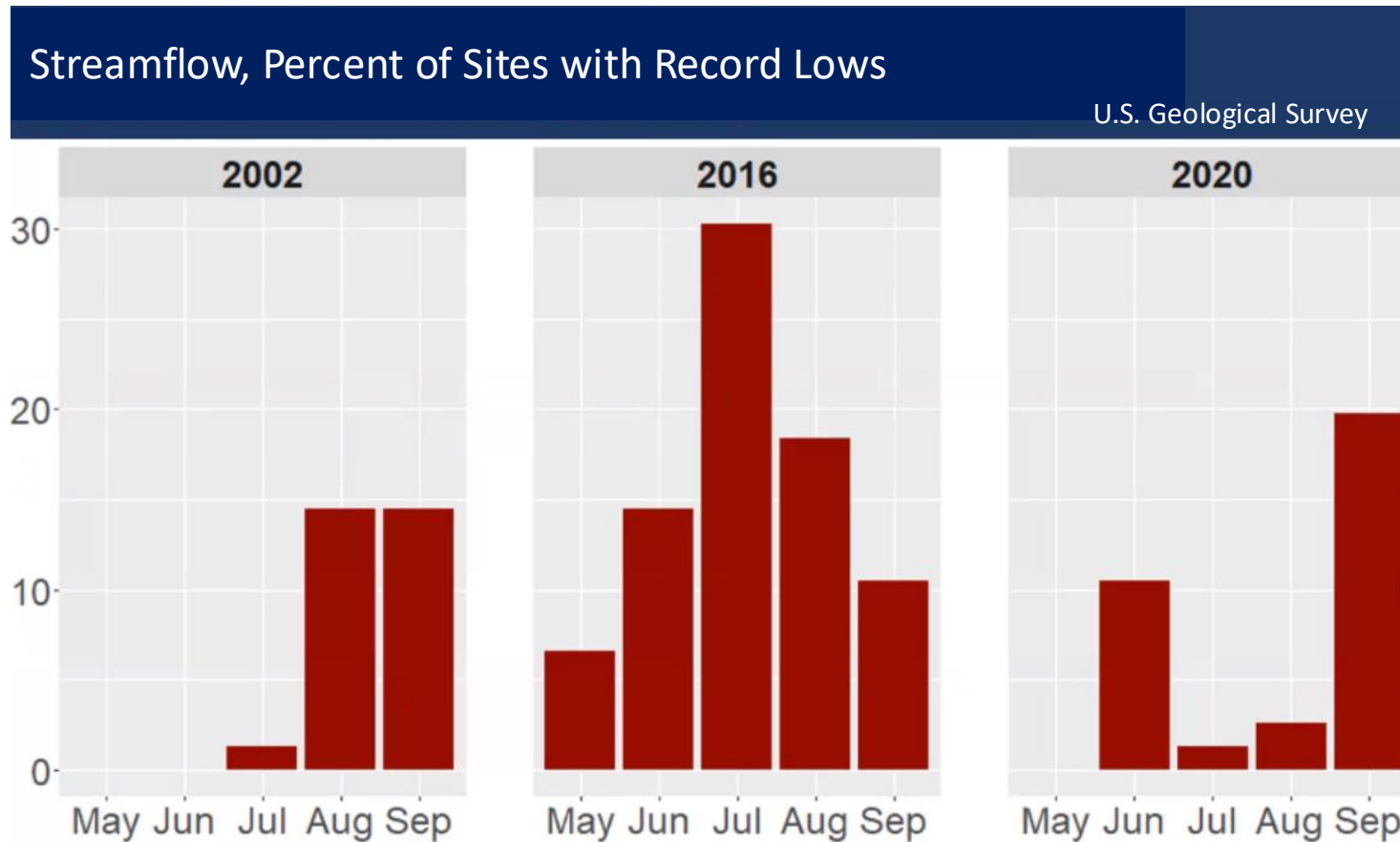
Hottest summer in
126 years



SOURCE: [Northeast Regional Climate Center](#)



Continually Setting Record Low Streamflow & Groundwater



- Changing distribution of rain
- Increasing temperature = increasing ET
- Increasing impervious surface = reduced recharge for groundwater and baseflow

What does drought look like in MA?



Drought Management



MASSACHUSETTS

DROUGHT MANAGEMENT PLAN

September 2019

Massachusetts Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114



Massachusetts Emergency Management Agency
400 Worcester Rd, Box 1496
Framingham, MA 01701



Precipitation



Streamflow



Groundwater



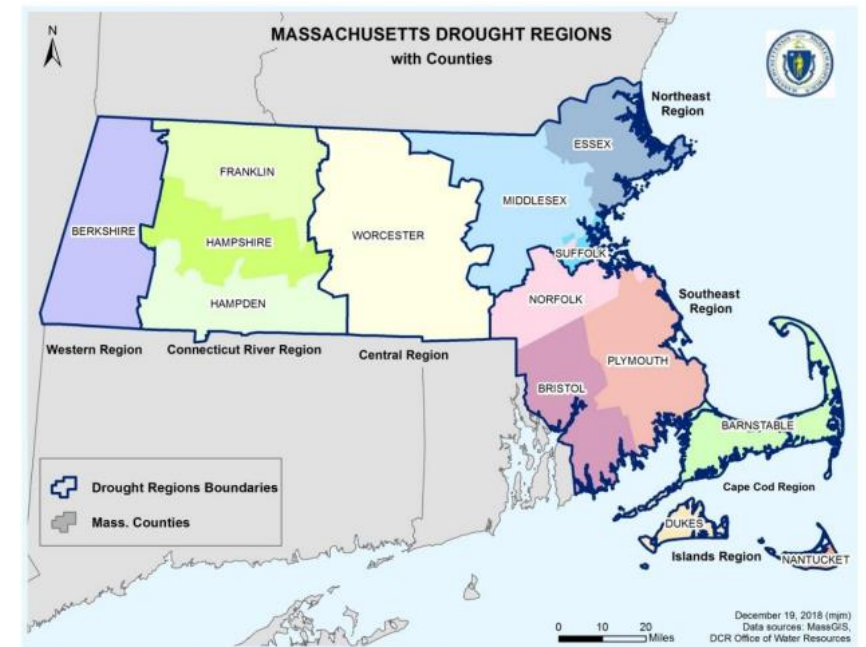
Lakes and
Impoundments



KBDI - Fire Danger



Evapotranspiration



Drought Management Task Force



MASSACHUSETTS
Rivers Alliance

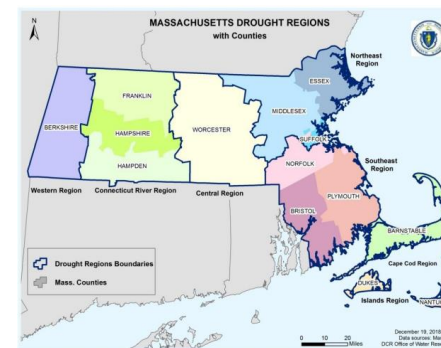


Drought Declaration Process

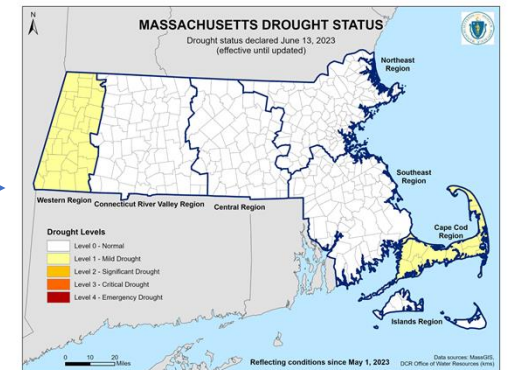
1. Six drought indices continuously monitored
2. Drought Management Task Force convenes
3. Drought levels recommended for each drought region
4. Secretary of Environment makes declaration
5. Task force monitors conditions, reconvenes regularly, updates recommendations based on best available data



Index Severity Level	Percentile Ranges	SPI Values
0	>30	> -0.52
1	≤30 and >20	≤ -0.52 and > -0.84
2	≤20 and >10	≤ -0.84 and > -1.28
3	≤10 and >2	≤ -1.28 and > -2.05
4	≤2	≤ -2.05



Mild Drought Conditions Declared for Western and Cape Cod Regions in Massachusetts
Other Regions Remain in Normal Conditions



Drought Declaration

MA DMP

Nonessential* Outdoor Water-Use Restrictions at Various Drought Levels

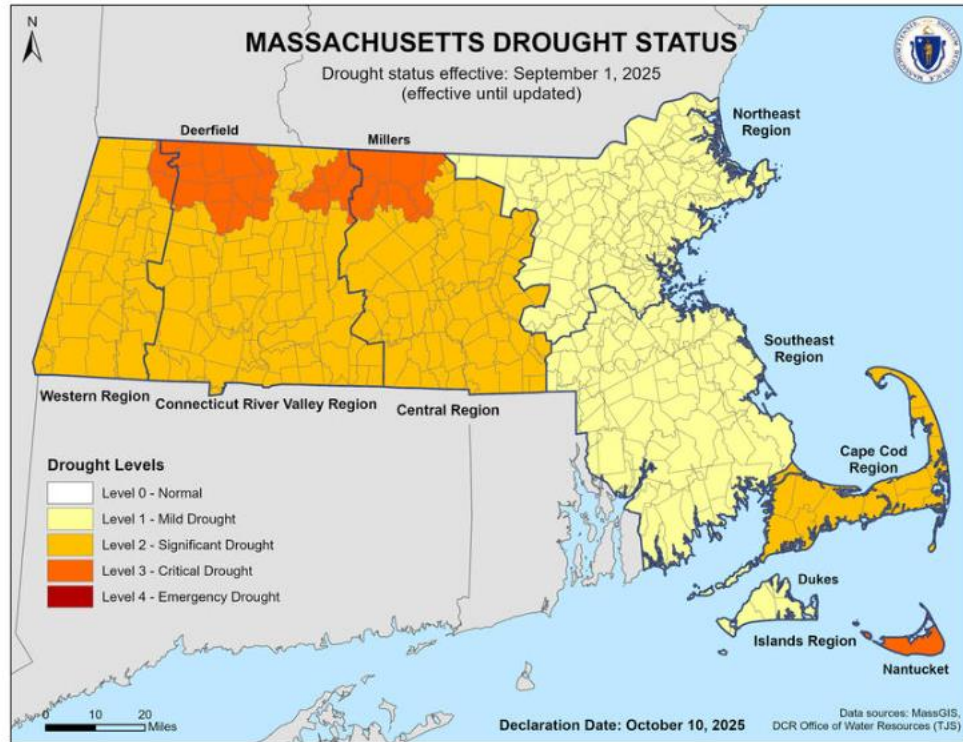
State Drought Condition (by Region)	Nonessential Outdoor Water-Use Restrictions
Level 1 (Mild Drought)	1 day per week watering, after 5 p.m. or before 9 a.m. (to minimize evaporative losses)
Level 2 (Significant Drought)	Limit outdoor watering to hand-held hoses or watering cans, to be used only after 5 p.m. or before 9 a.m.
Level 3 (Critical Drought)	Ban on all nonessential outdoor water use
Level 4 (Emergency Drought)	Ban on all nonessential outdoor water use

US Drought Monitor

Category	Description
None	Normal or wet conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

*Nonessential = use that is not required: 1) for health/safety, 2) by permit/license/statute/reg, 3) for production of food and fiber, 4) for meeting core functions of a business, 5) for public parks/recreation fields/shade trees

Drought Declaration



BOSTON — Today, Energy and Environmental Affairs (EEA) Secretary Rebecca Tepper declared that dry conditions in the Islands Region in Nantucket County have worsened to a Level 3–Critical Drought and in Dukes County to a Level 1–Mild Drought. The Northeast Region has improved from Level 2–Significant Drought to Level 1–Mild Drought. The Deerfield and Millers Watersheds have worsened to Level 3–Critical Drought. The Southeast Region remains at a Level 1–Mild Drought and the Western, Connecticut River Valley, Central, and Cape Cod Regions are still in Level 2–Significant Drought Conditions.

WE ARE IN
DROUGHT



Act Now! Use only what you need

What does "drought" mean in MA?

- Rain much below normal for several months
- Streams and groundwater very low, record low flows in many areas
- Drought-induced fire potential steadily increasing
- Potential water supply constraints, risk to fire protection
- Threats to fish and wildlife



Water Use: Minimize overall water use. Make sure toilets, and shower heads are WaterSense efficient.



Leaks: Look for leaks in homes and businesses. Check pipes and appliances. Inspect water meters for constant dial movement. Use dye tabs or food coloring to check for toilet leaks.



Appliances: Only do full loads of dishes and laundry. Use dishwasher instead of hand-washing. Limit dish rinsing and garbage disposal.



Showering: Reduce shower length to five minutes and avoid soaping hair. A timer can help!



Elevated fire risk! Refrain from outdoor cooking and heat pump burn yard waste. Be extra cautious with all flammable materials.



DROUGHT UPDATES [MASS.GOV/DROUGHT](https://www.mass.gov/drought)

Massachusetts Drought Alert

September 12, 2025



Significant Drought Conditions Across the State



Drought Alert issued by:
Secretary of Energy and Environmental Affairs: Rebecca L. Tepper
Director of MEMA: Dawn Brantley

Drought Impacts

More rain is needed to improve hydrological systems, especially streamflow and fire danger indices. Drought has immediate impacts on streamflow with drying streams and lower pond/lake levels; lower water levels affect aquatic habitat and fish movement. Drought also depletes soil moisture and dries vegetation/brush leading to increased and prolonged fires.

Multiple Regions

Five Regions and Nantucket County are at Level 2 - Significant Drought and Southeast Region is at Level 1 - Mild Drought. With 3-months of precipitation deficits and above-normal temperatures, drying trends continue across the state and indices are showing signs of stress.

Share your drought impacts with us!

Check out the new **MA Native Plant Palette!**
A free tool to explore native plants and create custom plant lists to support water conservation and drought resilience.

How you can help

Check with your local water system in case more stringent watering restrictions are in place. Many systems may have other local conditions and constraints on water supply.

Residents and Businesses:

- Use caution with smoking materials, power equipment, outdoor cooking, etc. **NO OPEN BURNING ALLOWED!**
- Limit outdoor watering to 5pm - 9am using hand-held hoses or watering cans (Level 2), or one day a week (Level 1)
- Conduct indoor water audits to identify leaks
- Plant local/drought-resistant species and harvest rainwater
- Avoid removing outlet boards/stop logs that manage pond/lake levels



Additional Resources

www.mass.gov/drought [X](#) @MassEEA [@masswaters](#) [@MassEEA](#) [@masswaters](#)
Water Conservation information [click here](#). Private Well owners information [click here](#).



Water Conservation Efforts

1

Regulatory

- Water Management Act
- Inter-basin Transfer Act

2

Policy

- Water Conservation Standards
- Drought Management Plan

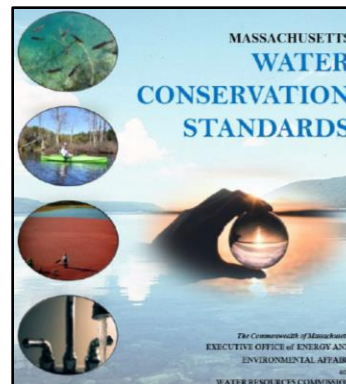
3

Education/Outreach

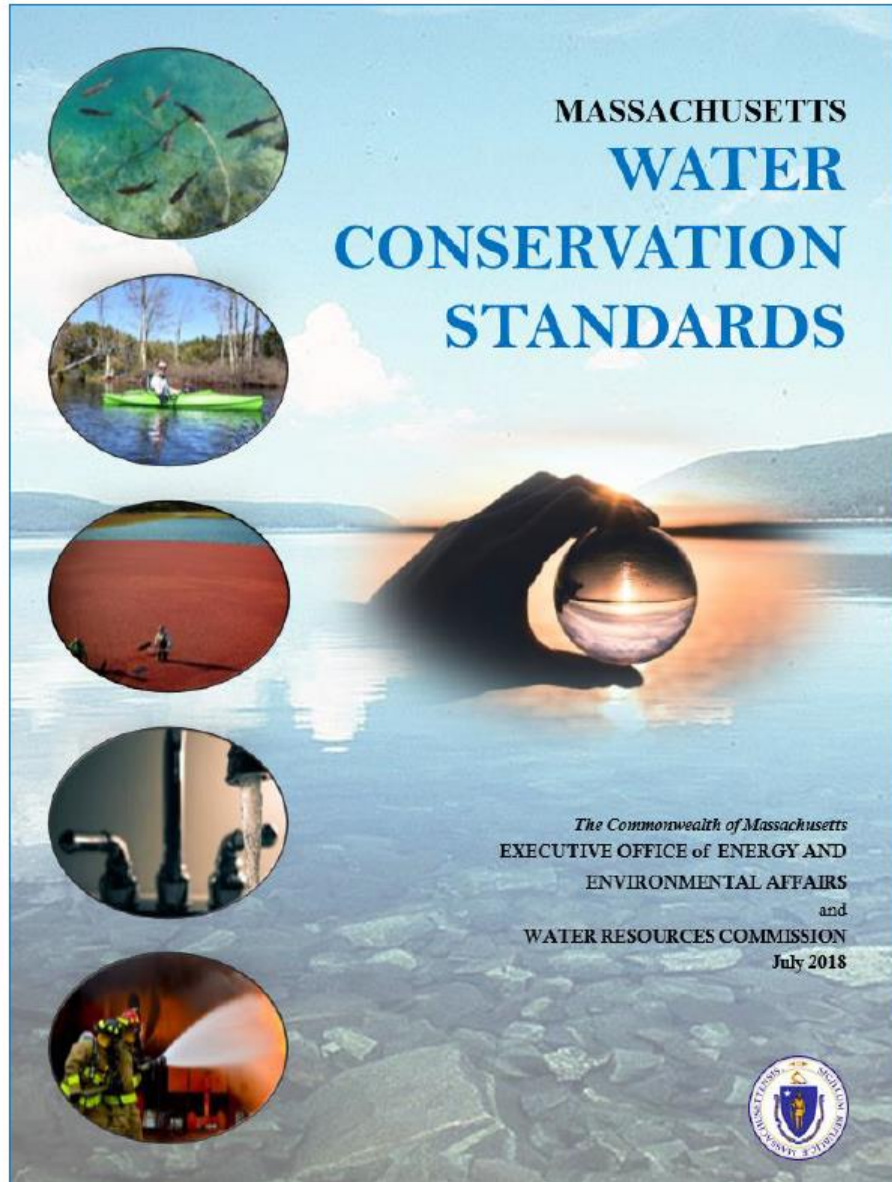
- Water conservation toolkit
- Videos, social media

Water Management Act Program

MassDEP's Water Management Act Program regulates the amount of water withdrawn from Massachusetts ground and surface water resources. This ensures adequate supplies for current and future needs.



MA Water Conservation Standards



Includes guidance on:

1. Comprehensive Planning and Drought Management Planning
2. Water Loss Control
3. Metering
4. Pricing
5. Residential Water Use
6. Public Sector Water Use
7. Industrial, Commercial, Institutional Water Use
8. Agricultural Water Use
9. Outdoor Water Use
10. Public Education and Outreach



www.mass.gov/conservemawater

A few examples of toolkit resources

Interactive Tools



Water Savings Quiz

Find out how much water you and your family can save?

WATER SAVING QUIZ

Take the quiz and find out!

Finding Leaks

IN THE BATHROOM

IN THE LAUNDRY ROOM



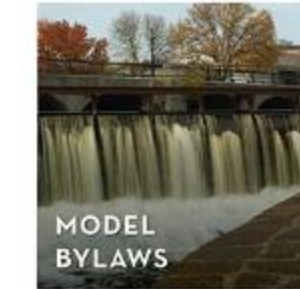
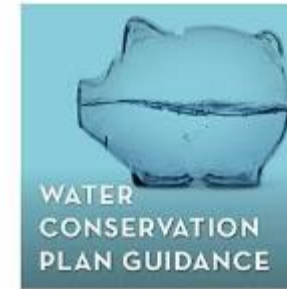
IN THE KITCHEN

IN THE YARD

PLANTING A WATER-SMART GARDEN



Technical Resources



Outreach Materials

Social media products



WATER SAVER TIP

BE GREEN, GO GOLD

When well-established lawns turn golden brown, they're not dead. They've gone dormant and will green up again when it rains. This actually deepens the roots and makes the lawn more drought tolerant.



Outreach Materials

Infographics



Outreach Materials

DROUGHT IN MASSACHUSETTS Frequently Asked Questions



What is a drought?

A drought is an unusually long period (2+ months) of dry weather that reduces water availability. Droughts can lead to problems like crop damage, water shortages, increased fire risk, dry streams, and habitat loss. The severity of a drought depends on the rain deficit, time of year, and duration. Check the latest hydrologic data [here](#).



Who declares droughts in MA? How are they determined? What are the different levels of drought?

Massachusetts uses a Drought Management Plan with four drought levels across seven regions. Drought levels are based on data like rainfall, streamflow, groundwater, reservoir levels, fire danger, and evapotranspiration. The Drought Management Task Force reviews this data and makes recommendations to the Secretary of Energy and Environmental Affairs, who declares the drought levels. For updates on current drought status, click [here](#).



What level of drought is my area in?

Massachusetts is divided into seven drought regions. Find your region's current drought level [here](#).



Where does my drinking water come from?

Drinking water may come from wells, reservoirs, or rivers. Some towns use a mix of sources, while MWRA communities get water from the Quabbin and Wachusett reservoirs. Contact your local public works/water department to learn more.



How does the drought impact me?

Drought can reduce water for households, fire protection, and the natural environment. Using water efficiently helps stretch supplies until conditions improve and supports your community's water sources.



Who can I go to if I need additional water or resources?

If you have a private well that is running dry, contact your local town office and board of health to report it. If your town has a public water supplier or fire department, contact them to see if you can temporarily hook up to their system. In addition, farmers may contact the MA Department of Agricultural Resources for assistance.

DID YOU KNOW?

Turning off water when brushing teeth & shaving can save **10 gallons** per person/day

Installing a high efficiency toilet can save **19 gallons** per person/day

Washing full loads of clothes can save **15-45 gallons** per load

Washing a full load of dishes can save **5-15 gallons** per load

On average, **10% of homes** have leaks that waste **90 gallons** or more per day.

LET US KNOW

about any drought-related impacts you experience through our [drought impact reporter](#).

WHAT CAN YOU DO TO HELP DURING A DROUGHT?

Conserving water is always a good idea, but it is especially important during times of drought. We can all help reduce the impact of the drought by using less water, and if the drought becomes more severe, we can increase our conservation in response.



Look for leaks in homes and businesses. Check pipes, fixtures, and appliances. Inspect water meters for constant dial movement. Use dye tabs or food coloring to check for toilet leaks.



Avoid letting the water run, take shorter showers, and wash only full loads of dishes and laundry. **Be mindful of indoor water use and use only what is necessary.**



Use drought-resistant, native plants in your garden and employ **water-smart landscaping principles**.



Avoid outdoor watering during the growing season. If you have a vegetable patch that needs some water, use a hand-held device only. Lawns naturally go dormant when water is scarce and revive when conditions improve.



Make sure your water fixtures are **WaterSense efficient**.



See how much you can save! Use the **MA Home Water Use Calculator tool** to help evaluate your household use.



Talk to your friends and neighbors about conserving water!



MORE WATER SAVING TIPS
MASS.GOV/CONSERVEMAWATER

Drought Video Series

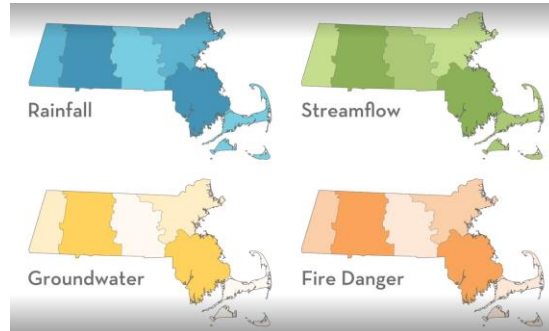


Informational videos explaining:

- What drought is
- Drought impacts in MA
- How we monitor conditions/prepare for impacts
- How people can help
- Videos available at:
 - [Drought Tips, Tools, and Resources](#)

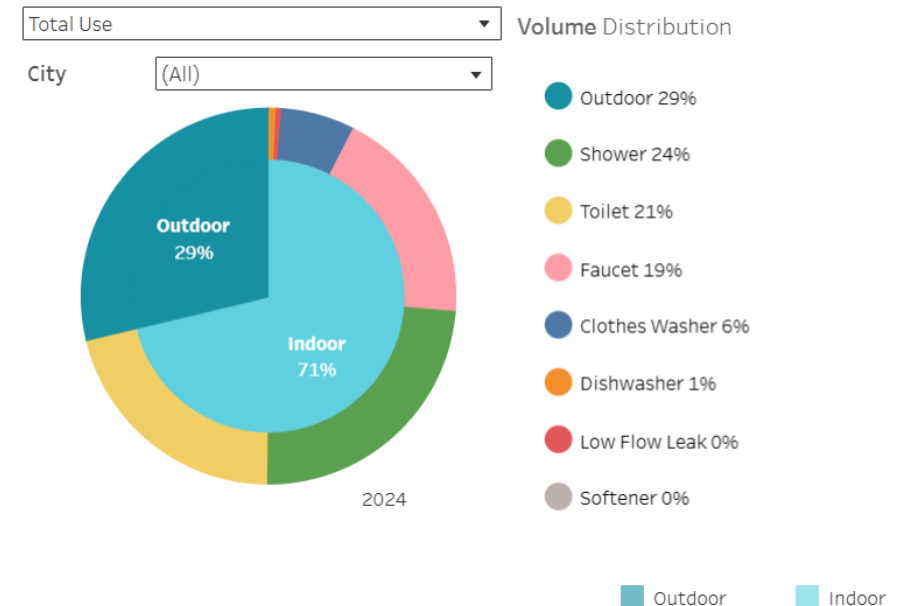
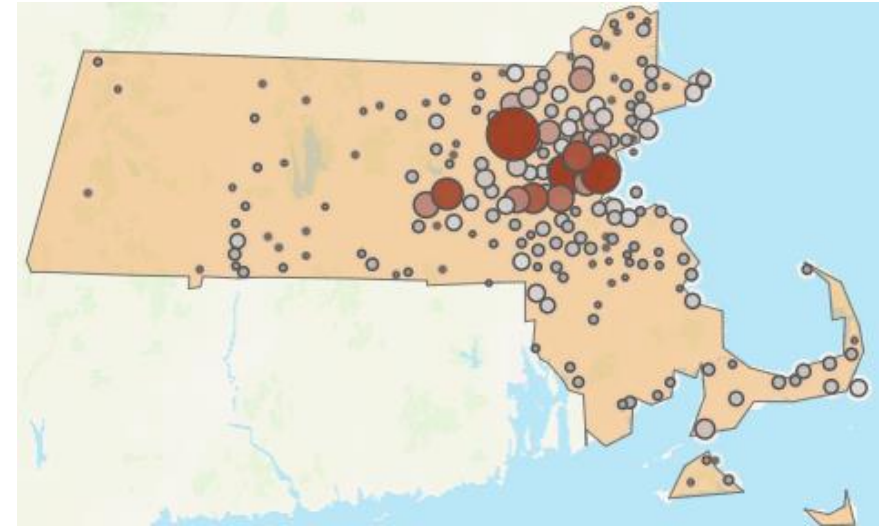


Rockport, MA - July 2022



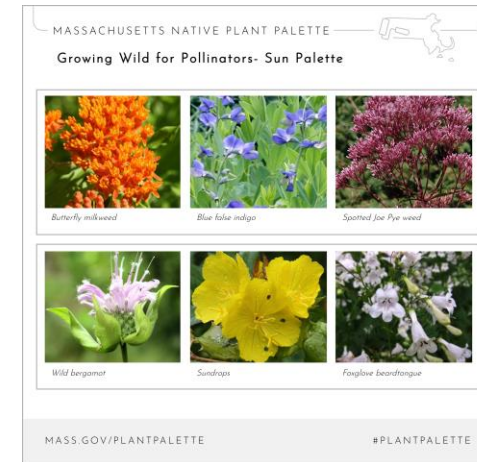
Recent Water Conservation Achievements

- Drought Resiliency and Water Efficiency Grant Program
 - \$500,000 awarded to 13 projects in FY25
 - RFP for FY26 just posted
- Water data projects
 - Collaborative water database project with USGS
 - Flume data and dashboard



Recent Water Conservation Achievements

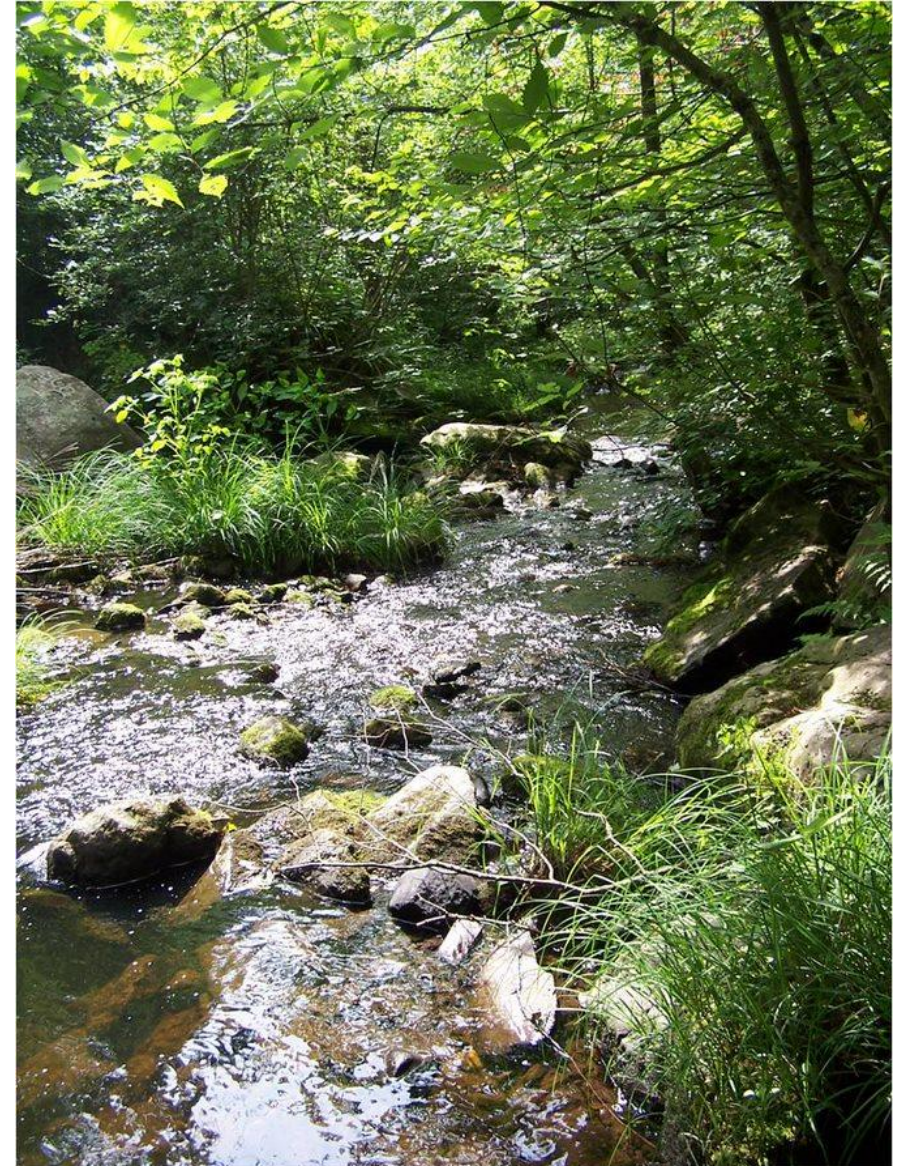
- Native plants/drought resilient landscapes
 - Native Plant Palette (www.mass.gov/plantpalette)
 - Collaborations with other agencies and external partners
- Alliance for Water Efficiency
 - Learning from and sharing with water conservation professionals at the national level



What's next?

FUTURE GOALS:

1. Continue responding to community needs on drought and water conservation messaging
2. Expand DRWE grant program / other funding opportunities for communities
3. Evaluate MA water efficiency goals
 - 65 rgpcd / 10% UAW
 - data driven planning
 - peak demand management (winter/summer ratios?)
4. Regional water planning and better integration with statewide housing efforts



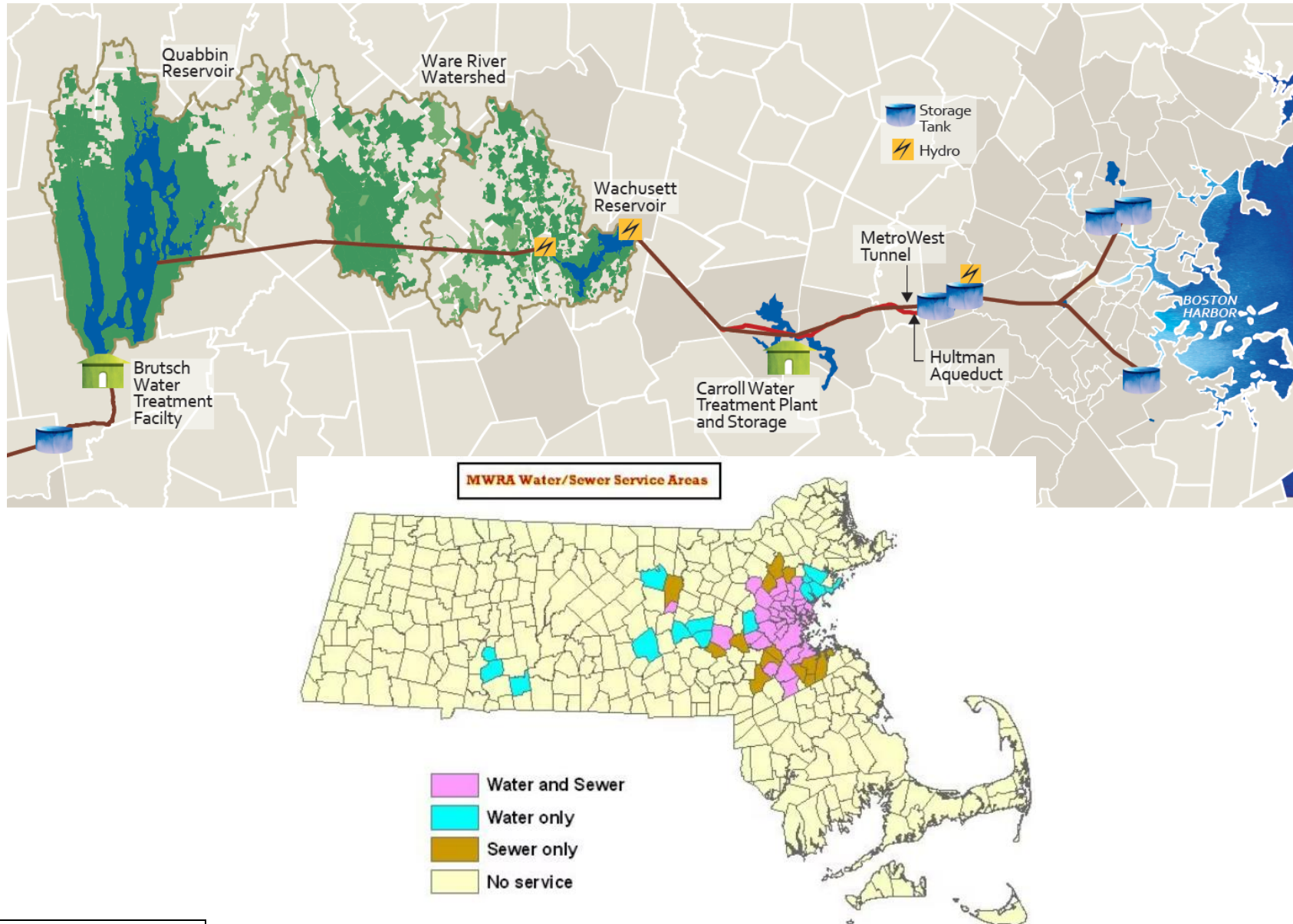


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Jason Duff
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Extra Slides

MA Water Supply



ESSENTIAL STATISTICS

[MWRA Profile](#) (PDF)

3.1 million people served

890,000 households served

5,500 businesses served

200 million gallons per day of water supplied (average)

350 million gallons per day of sewage treated (average)

43 sewerage communities

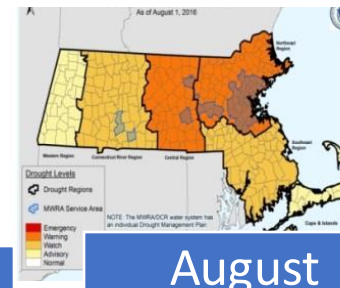
53 water communities

61 communities collectively

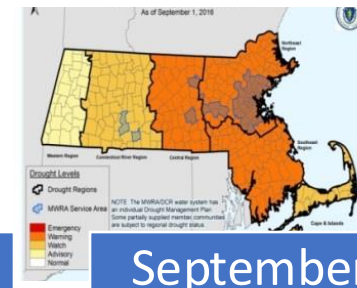
The Drought of 2016 - 2017



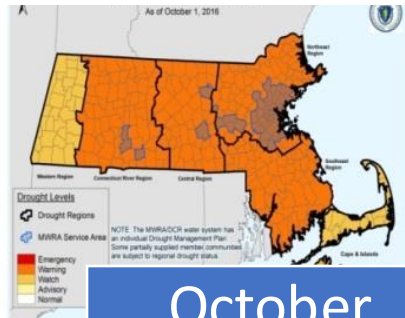
July 2016



August



September



October



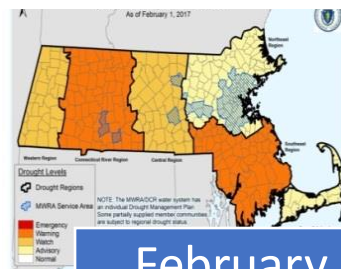
November



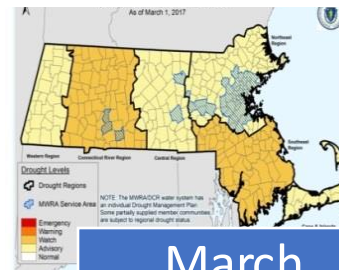
December



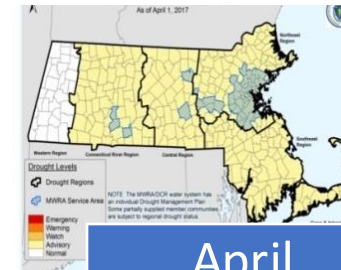
January 2017



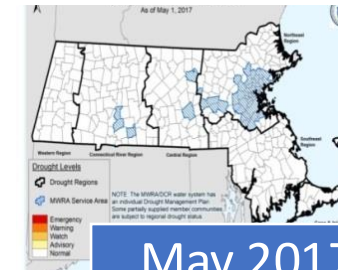
February



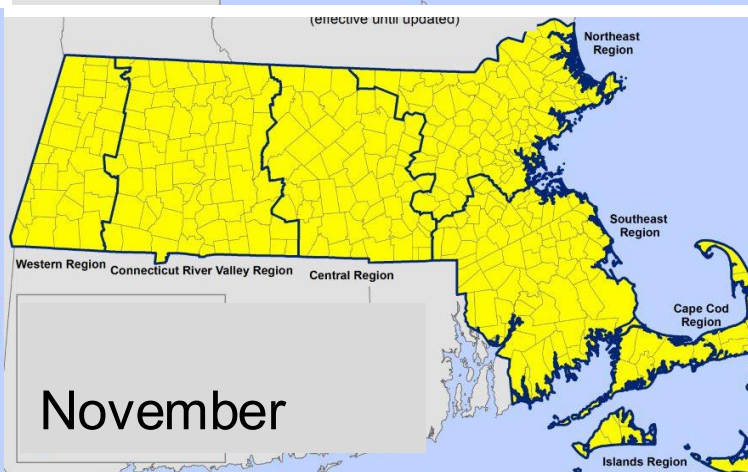
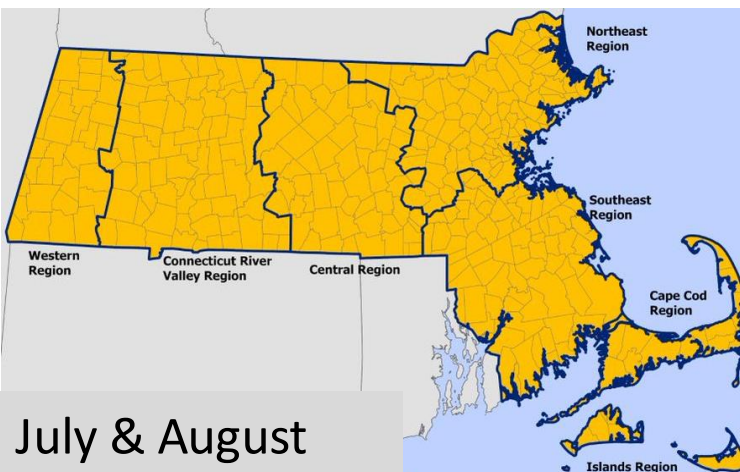
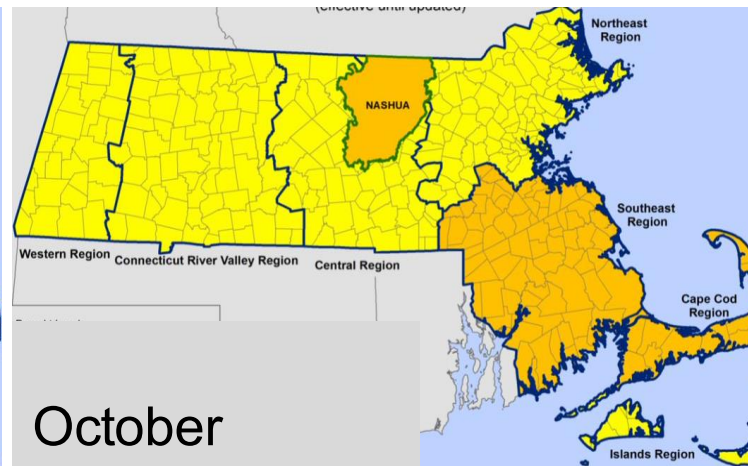
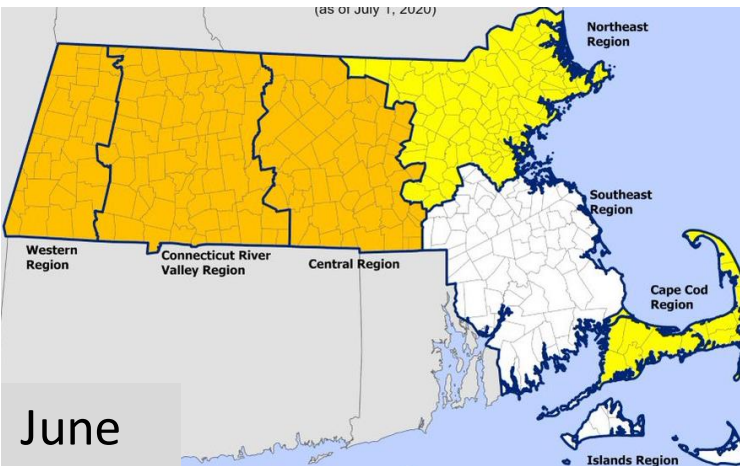
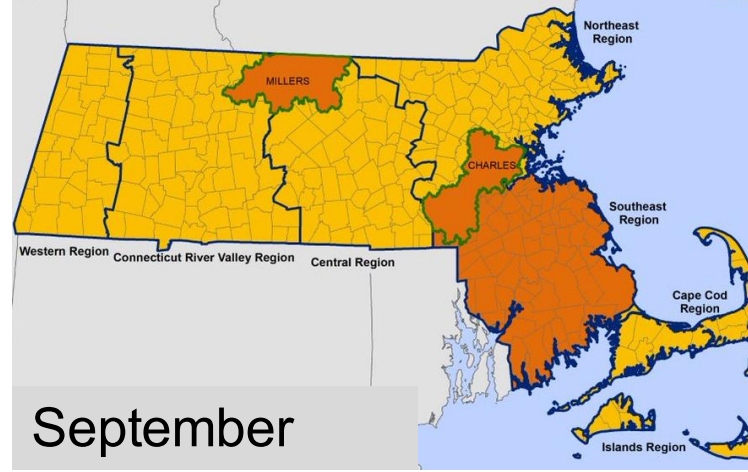
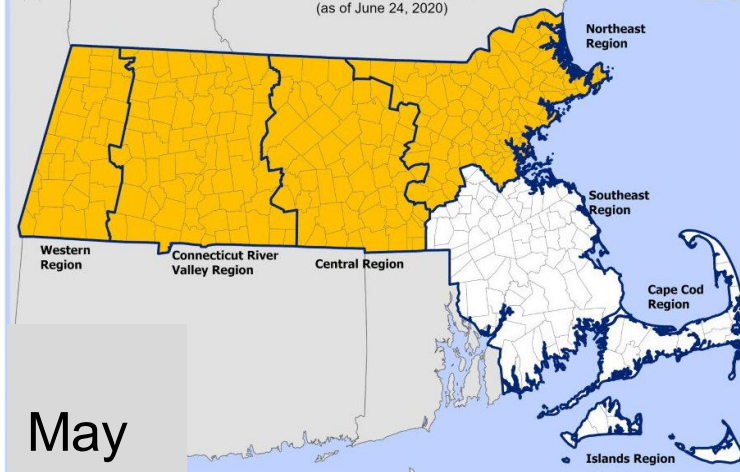
March



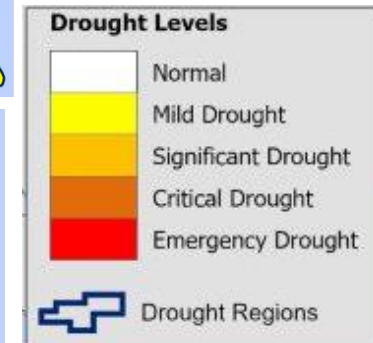
April



May 2017



The Drought of 2020



Recent Droughts



2016 was our most severe drought since the 1960s



Outreach Materials

Level 2 - Significant Drought

LEVEL 2 - SIGNIFICANT DROUGHT

LEVEL 1 Mild Drought
LEVEL 2 Significant Drought
LEVEL 3 Critical Drought
LEVEL 4 Emergency Drought

What does this mean?

Rain below normal for over 2 months
Streams and ground water low, nearing very low flows in some areas
Fire danger steadily increasing
Strain on some water supplies

Act Now!

RESIDENTS AND BUSINESSES:

- Minimize overall water use.
- Limit outdoor watering to hoses/watering cans and only after 5pm and before 9am.
- Limit installation of new landscapes.

GET A DROUGHT UPDATE AT
MASS GOV/MA-DROUGHT-MANAGEMENT

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IMMEDIATE STEPS FOR COMMUNITIES:

- Minimize overall water use.
- Limit outdoor watering to hoses/watering cans and only after 5pm and before 9am.
- Limit installation of new landscapes.
- Revisit water conservation targets and conduct targeted outreach.

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SHORT AND MEDIUM-TERM STEPS FOR COMMUNITIES:

- Establish a water conservation program that includes public education and communication.
- Regularly update local residents and businesses.
- Use drought surcharges or seasonal water rates.
- Check emergency inter-connections for water supply.
- Develop or refine your local drought management plan.

GET A DROUGHT UPDATE AT
MASS GOV/MA-DROUGHT-MANAGEMENT

Residents and Businesses

Immediate steps for communities

Short and medium - term steps for communities

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