

**2015-2020 MASSACHUSETTS PUBLIC WATER
SUPPLY USE TRENDS**

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Massachusetts Department of Environmental Protection**

**Water Resources Commission Meeting
April 14, 2022**

GENERAL ASR REVIEW PROCESS

- Data from Annual Statistical Reports (ASR).
- WMA staff review each ASR for basin and source withdrawal volume consistency and the calculated RGPCD & UAW values.
- Letters sent to PWSs with potential adjustments:
 - briefly explains the potential adjustment & provides an opportunity to submit additional information.
 - Supplemental information reviewed and adjustments made as appropriate.
- 100-150 letters are sent each year, with less than half usually providing additional information.
- Final values posted on MassDEP website.

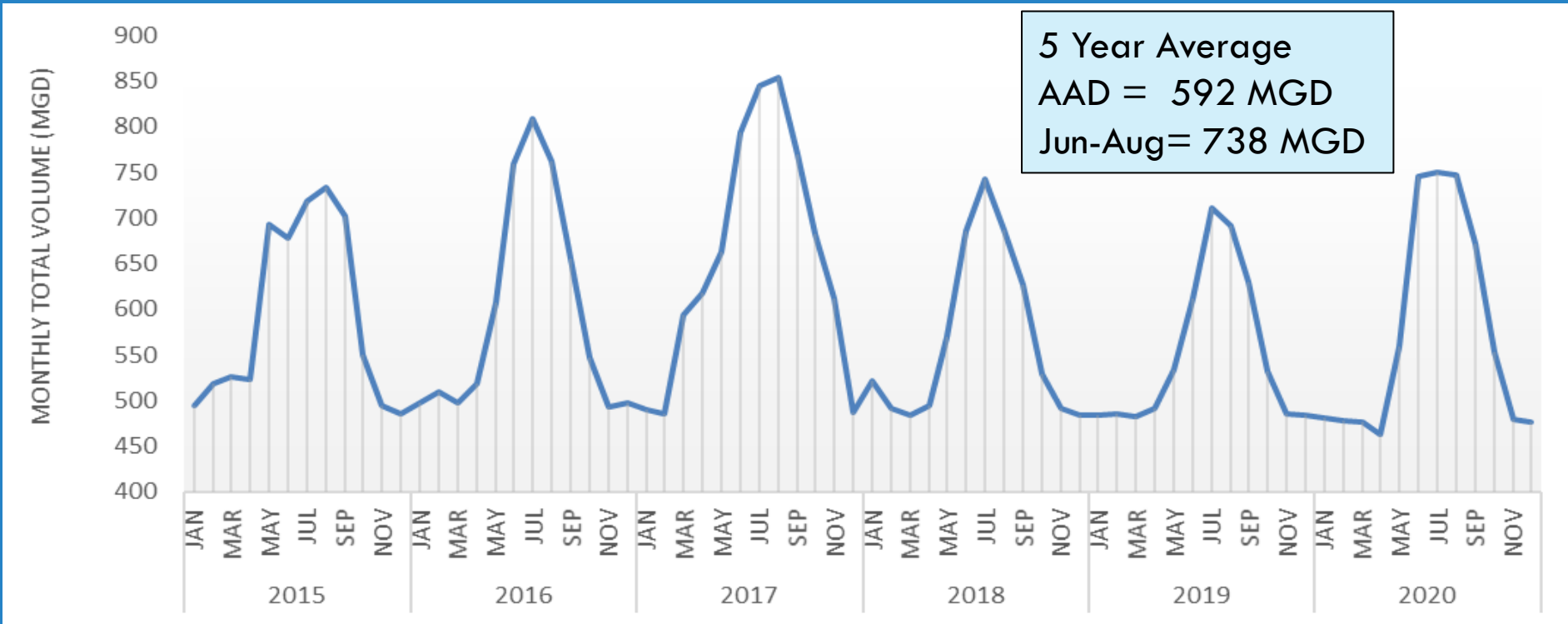
RGPCD REVIEW PROCESS

- PWSs serving the entire town calculate residential population served by using census data, either from most recent federal census or recent census data compiled by state, regional, or local authority.
- For Districts, Companies or partially served communities, the population is estimated from the average household size and # of service connections.
- The population numbers submitted are compared to the most recent census data or to the population values reported for the past three years. Population values that have changed more than 10% from the most recent year without backup documentation are flagged for additional information letters.

2019 & 2020 REVIEW

- **2019** - 147 letters sent for the following reasons:
 - 24 source volume
 - 3 RGPCD
 - 132 Confidently Estimated Municipal Use (CEMU)
 - CEMU issues involved:
 - 61 missing backup data
 - 19 adjustments result in UAW going from <10% to >10%
 - ~50 PWSs responded.
- **2020** - 102 letters sent for the following reasons:
 - 16 source volume
 - 7 RGPCD issue
 - 89 CEMU issue
 - CEMU issues involved:
 - 59 missing backup data.
 - 16 adjustments result in UAW going from <10% to >10%
 - ~30 PWSs responded.

Training on
completing ASR
held in Feb. 2021



Ave. Annual MGD	593	596	658	567	552	573
June-Aug Ave. MGD	710	777	830	704	671	748

PUBLIC WATER USE IN MA (2015-2020)

SECTORAL WATER USE CHANGE

(2020 to 2015-2019 Average)

Metered Water Use

2015-2019 Ave. = 483 MGD

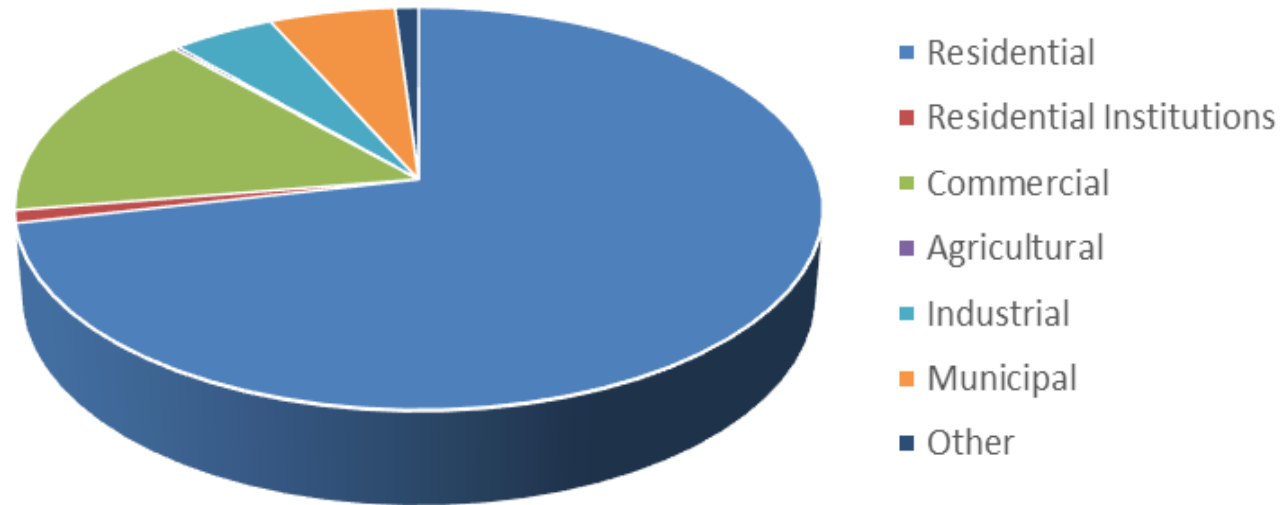
2020 Ave. = 472 MGD

Residential Use

2015-2019 Ave. = 328 MGD

2020 Ave. = 338 MGD

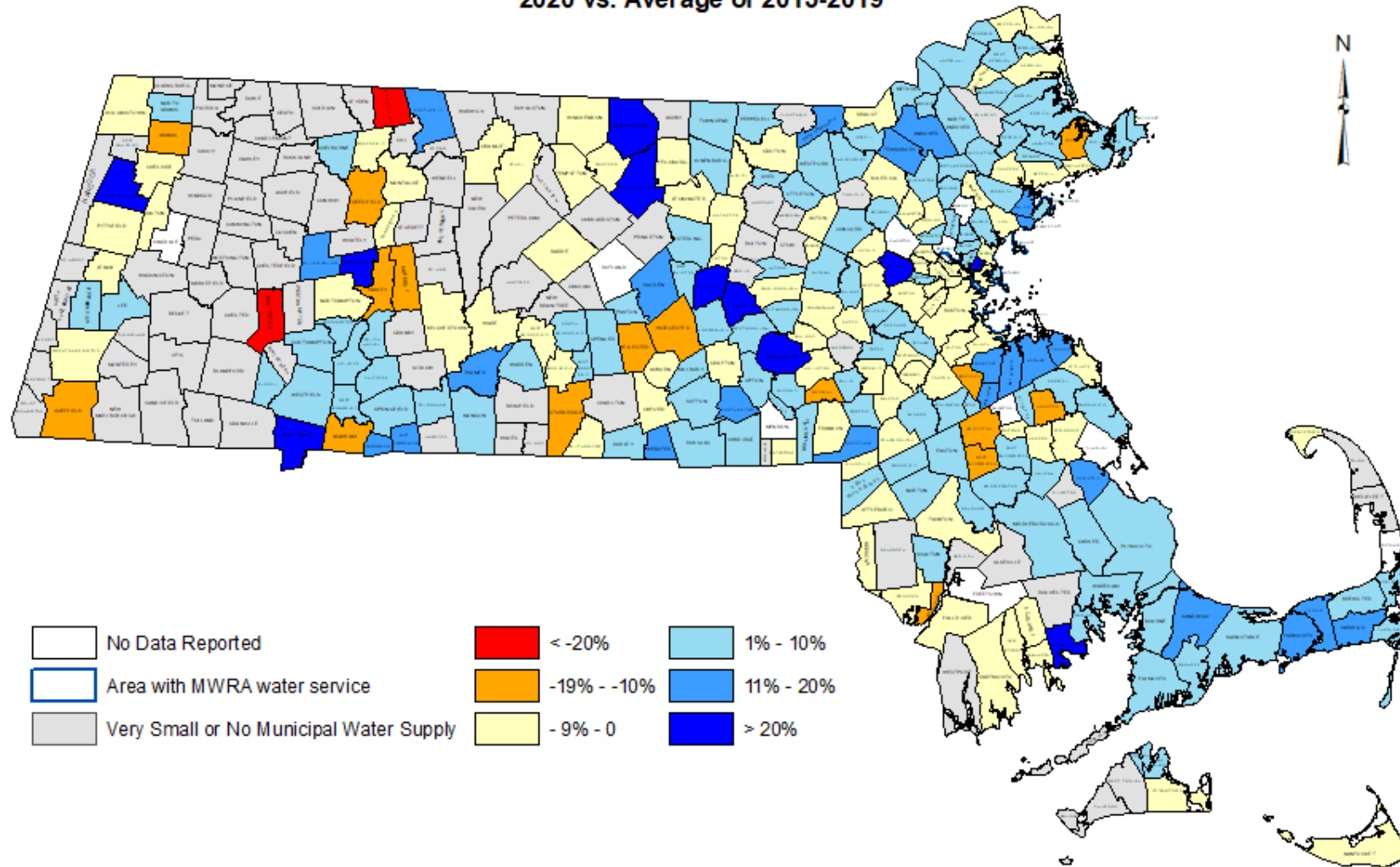
Sectoral Water Used in 2020



Residential use was 72% of total water use in 2020, but 68% in 2015-2019 average

Change of Total Public Water Use

2020 vs. Average of 2015-2019



SOURCES:

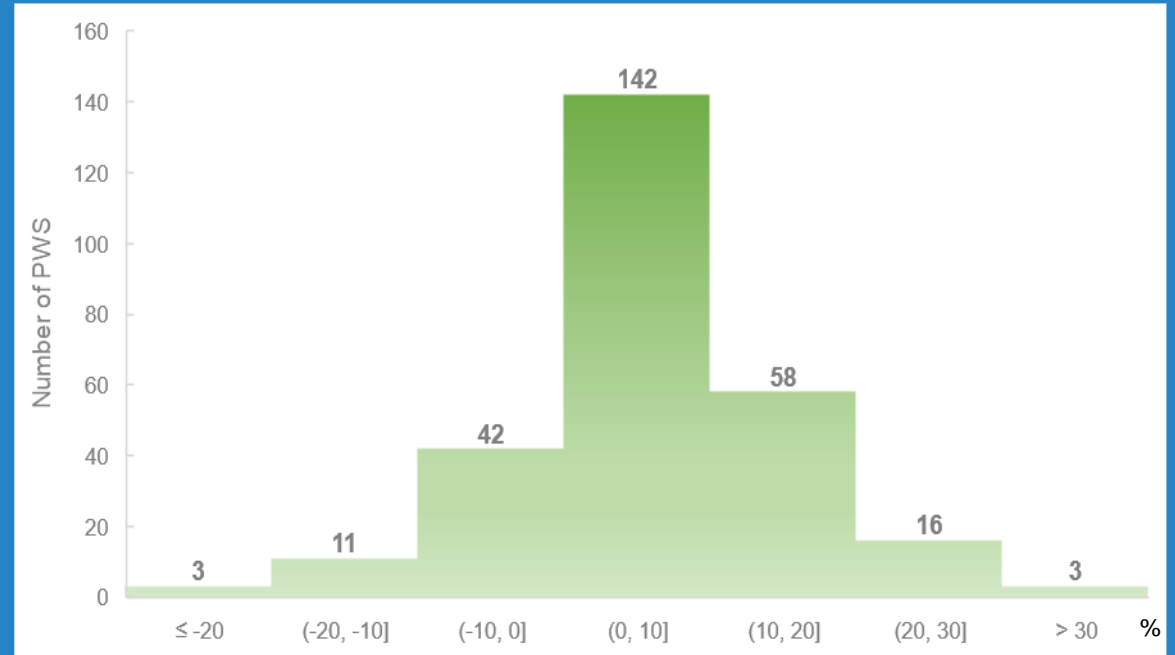
MassDEP Bureau of Water Resources, Water Management Program; MassDEP GIS Program; Mass GIS.
Annual ASR report provided by municipal Public Water Suppliers.

NOTE: Towns with more than one PWSs, reflect only one PWS value.

2015-2020 RGPCD DATA SUMMARY

	2015	2016	2017	2018	2019	2020
RGPCD Average	58	58	55	55	54	59
# PWS at $65 \leq$ (%)	198 (77%)	199 (78%)	217 (87%)	212 (81%)	227 (88%)	194 (76%)
# PWS at > 66	60	55	33	40	30	61
RGPCD Range	25/127	25/135	24/112	25/110	28/99	26/139

RESIDENTIAL WATER USE CHANGE (2020 to 2015-2019 Average)



Decreased water use in 2020 vs. 2015-2019 average:

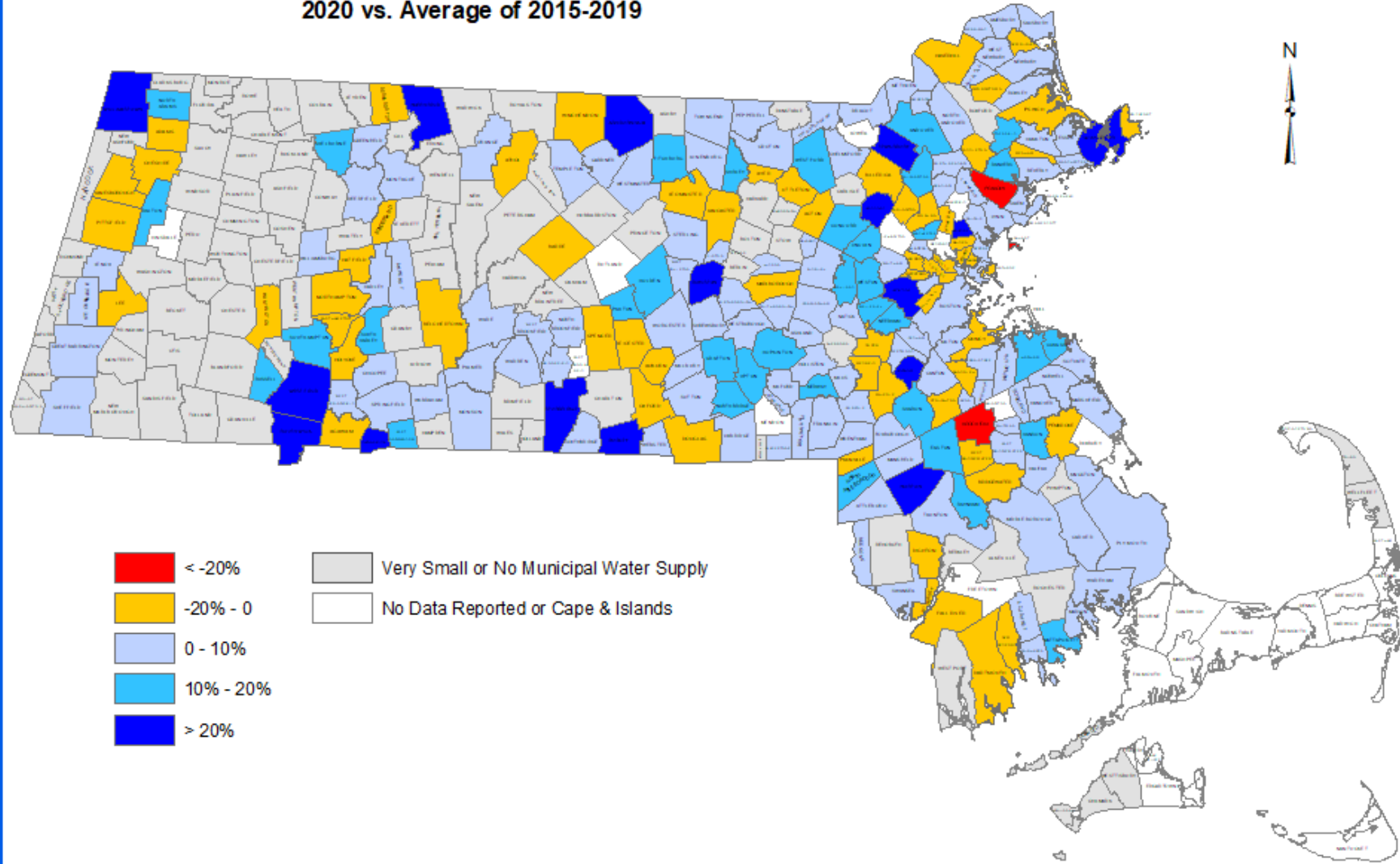
- Lowest percentile decrease in residential use was 41%
- 14 PWSs decreased by more than 10%
- 3 of those 14 PWSs decreased use over 100 MG
 - PEABODY WATER DEPT
 - FALL RIVER WATER DEPARTMENT
 - SOMERVILLE WATER DEPT

Increased water use in 2020 vs. 2015-2019 average

- Highest percentile increase in residential use was 53%
- 19 PWSs increased more than 20%.
- 5 of those 19 PWSs increased use over 100 MG
 - SANDWICH WATER DISTRICT
 - MELROSE WATER DIVISION
 - NEWTON WATER DEPT.
 - LONGMEADOW WATER DEPT
 - GLOUCESTER PUBLIC UTILITY DIVISION

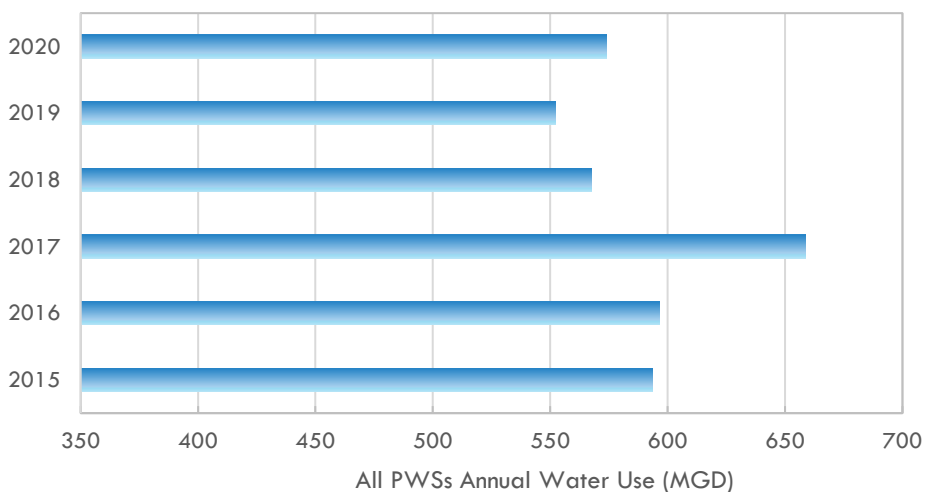
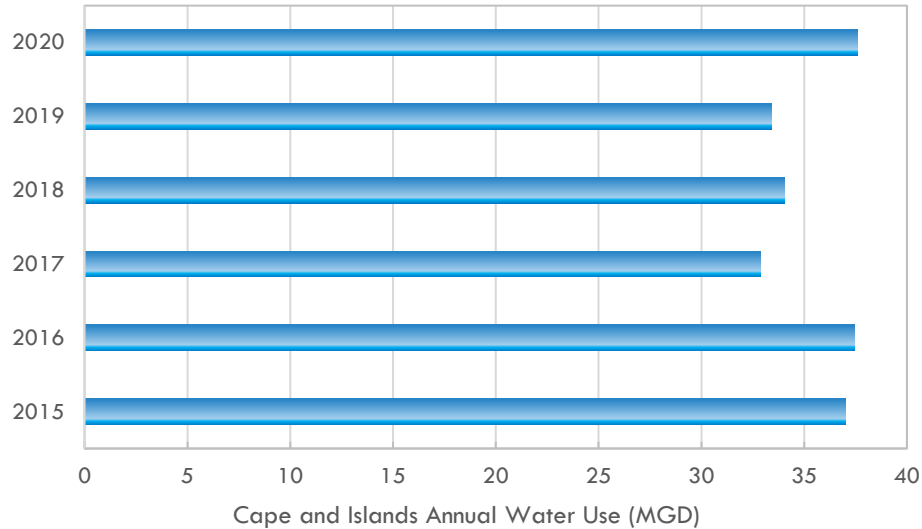
Change of Residential Gallons per Capital Day (RGPCD)

2020 vs. Average of 2015-2019



SOURCES:
MassDEP Bureau of Water Resources, Water Management Program; MassDEP GIS Program; Mass GIS.
Annual ASR report provided by municipal Public Water Suppliers.
NOTE: Towns with more than one PWSs, reflect only one PWS value.

CAPE COD AND ISLANDS WATER USE DURING THE PANDEMIC



- 20 PWSs serve Cape Cod and Islands
- In 2020, those 20 PWSs' total water use **INCREASED 8%** from 5YR Ave. (37.6 MGD vs 35 MGD)
- All 275 PWSs' 2020 total water use **DECREASED 3.3%** from 5YR Ave. (574 MGD vs 594 MGD)

RGPCD CONCLUSIONS

- RGPCD has been trending downwards with the exception of 2020.
- Total public water supply usage decreased during the COVID-19 Pandemic.
- Residential use increased and non-Residential sectors decreased.
- The net impact of pandemic on water use change mainly depends on the relative proportion of residential and non-residential sectors.

UAW REVIEW PROCESS

2020 CEMU Calculations

% of suppliers submitting CEMU 89%
CEMU Range 0 -13% Average = 3.4%
CEMU Volumes 0 - 1561 MGY (4.3 MGD)
Average volume= 18.7 MGY (0.05 MGD)

- All confidently estimated municipal uses (CEMU) must be documented to show how volumes were calculated. Volumes without documentation are not accepted and are flagged for a letter.
- If CEMU is 3% or less and there is backup documentation, individual values are accepted **WITHOUT REVIEW.**
- If CEMU percentage is greater than 3%, documentation is reviewed. Municipal uses that are accepted: fire protection, hydrant/main flushing, bleeders, tank overflows, sewer/stormwater flushing, street cleaning, meter calibration, major (catastrophic) water main breaks. Leak detection volumes are not accepted.
- CEMU values are then used to calculate UAW.

2015-2020 UAW DATA

	2015	2016	2017	2018	2019	2020
UAW Average (%)	15	13	14	14	14	13
# PWS with UAW of ≤10% (% meeting)	112 (41%)	128 (47%)	126 (47%)	126 (46%)	119 (43%)	125 (46%)
# of PWS with UAW >10 %	163	146	141	145	156	147
Reported UAW % Range	1/66	0/52	0/56	0/52	1/51	0/57

M36 AUDITS

AWWA M36 Grant 2016-2022

- Designed to assist PWS permittees and registrants reduce their non-revenue water
 - help determine how much water is being lost due to leakage, meter error, or other conditions; and
 - determine the cost of uncaptured revenue from non-revenue water
- The M36 Audit has been successfully implemented throughout the country.
- Permittees not meeting the 10% UAW Standard for 2 out of 3 years will be required to conduct a M36 Audit and implement the results to be considered Functionally Equivalent.

M36 AUDITS 2016-2022

- 100 AWWA M36 Water Audits have been funded to date.
- In 2017 and 2019, funds were also provided for 6 free M36 Audit training sessions across the state.
- A detailed instruction manual for the M36 Audit methodology was also created.
 - Found on-line at: <https://www.mass.gov/service-details/public-water-supply-tools-resources-performance-standards>

AWWA M36 AUDIT RESULTS - OVERVIEW

M36 Audit Results have pointed to the following areas to focus on:

- Accuracy of master meters
- Accuracy of customer meters
- Billing inaccuracies
- Systemic data handling errors

Improvements in these areas will lead to reductions in UAW.

PWSs doing more than one round of M36 Audits (Acton, Attleboro, DWWD, Dracut, Hanover, Holden, Hopkinton, Plymouth, Salisbury, Shirley, Three Rivers, Westboro)

- 10 of the 12 have improved their overall M36 data validity score.
- 7 of the 12 have improved their UAW values.



QUESTIONS?

For more information contact MassDEP Water Management Program:

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ASR instructions, sample CEMU forms and sample RGPCD forms can be found at:

<https://www.mass.gov/how-to/public-water-supply-annual-statistical-reporting-via-edep>

- DEP-approved RGPCD and UAW are available at: <https://www.mass.gov/service-details/public-water-supply-tools-resources-performance-standards>