Water Needs Forecasting Overview

Jason Duff, DCR January 11, 2024

> dct Massachusetts



Role and Purpose of WNF:

Indicate system water volume needs at Years 5, 10, 15, & 20

WMA new permits/renewals require an OWR 20-year forecast of system water needs

Occasional other reasons for forecasting (e.g. comprehensive planning)

Forecast is specific to each water supplier

WRC-approved methodology







Key Milestones:

<u>Mid-1980s</u>: WRC approves original water needs forecasting methodology

1991: WRC approves revised methodology

2001: WRC approves policy for developing water needs forecasts

2006: WRC approves update of Water Conservation Standards

<u>2007</u>: WRC approves update of "Policy for Developing Water Needs Forecasts for Public Water Suppliers and Communities and Methodology for Implementation"

2009: WRC approves revision to "policy" ("administrative updates")

<u>2010</u>: WRC approves adaptation of methodology for Cape & Islands

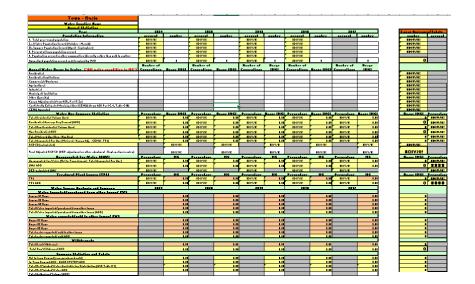
<u>2017</u>: WRC approves revision to policy and methodology: increased buffer to 10% for Cape & Islands

Steps in Developing Forecasts:

1) Compile and review ASR data, identify gaps

- 2) Gather additional data
 - PWS, town planners, RPAs, consultants
 - Census data
 - DOT Pop and Emp projections
- 3) Develop draft forecast

Metered Finished Water Use (MG)	20)22	2021		
	Number of		Number of		
	connections	Volume (MG)	connections	Volume (MG)	
Residential	4676	364.416	4285	361.693	
Residential Institutions					
Commercial/Business	346	84.216	338	79.627	
Agricultural					
Industrial					
Municipal/Institutional/Non-profits	58	96.848	58	16.822	
Other					
Total Use	5080	545.48	4681	458.142	



Steps in Developing Forecasts:

4) Share draft forecast letter with DEP (opportunity to address any critical concerns)

5) Discuss draft forecast letter with stakeholders

6) Develop final forecast letter with any input received during discussions

Assuming 65 rcpcd and 10% unaccounted-for water:

	2014	2019	2024	2029
Projection (mgd)	0.56	0.57	0.57	0.57
	+ 0.03			

Assuming water use continues at current rgpcd and unaccounted-for water levels during the permitting period:

	2014	2019	2024	2029
Projection (mgd)	0.67	0.68	0.68	0.69
	+ 0.03			

Data used in projections:

Water-use data for 3 to 5 years (from ASRs):

- Residential
- Nonresidential
- Treatment plant losses (if any)
- Purchased/sold
- CEMU
- UAW

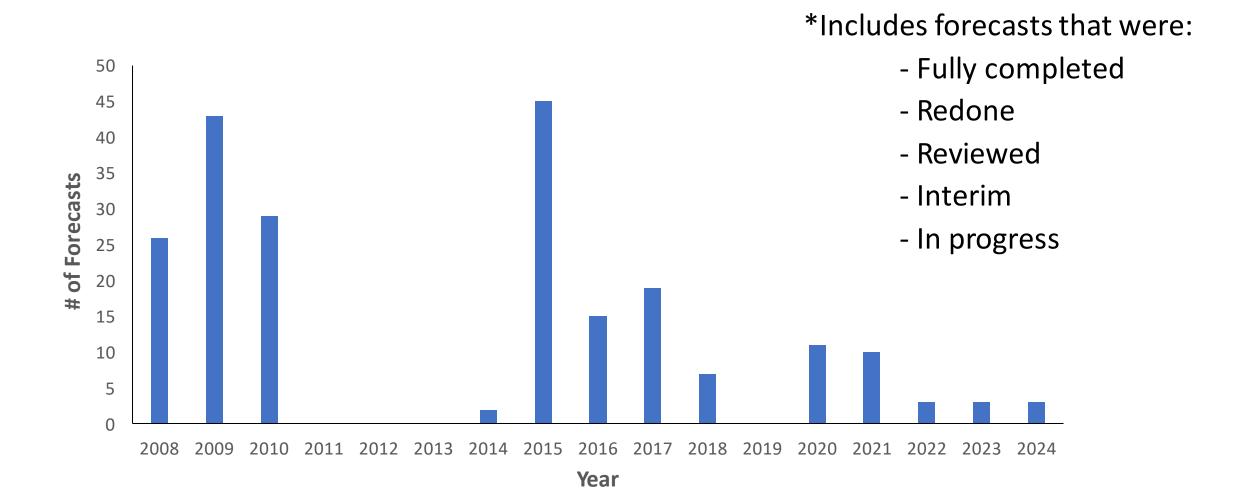
Population served by water system (including out of town and seasonal)- present and projected

Employment- present and projected (for non-res estimates)

Anticipated significant changes in water use

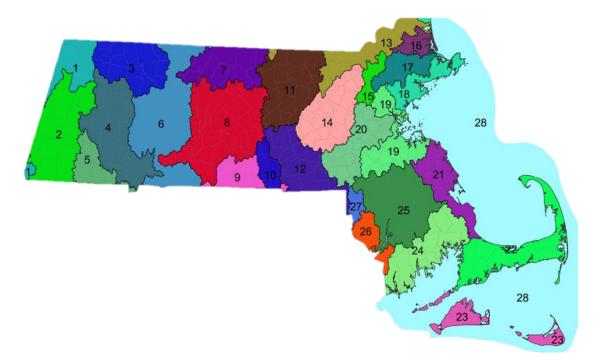


WNF Statewide Summary:



Recently Completed/Ongoing Forecasts:

Beverly-Salem- completed Dover (Aquarion)- completed Southwick- completed Wilkinsonville- completed Kingston- in progress Onset- in progress Dunstable- in progress



Future Considerations:

- 1) Upgrading data storage/management systems
- 2) Beginning discussions with DEP on WNF methodology-last significant updates in 2007
- 3) Water Conservation Standards- last updated in 2018

Voles Intellies Land	-											
famed Methodian												
True	2021		2020		2813		2010		2812		1 eres Berrer	of Lat
Persisting Information	arrest al		errerel		accessed.	anales.	arrent l	maker	access1	anales .	les	
Tridecount public	BOCK/B		#2117/0C		BOCCUT:		BERT/B					_
Mater Equivies Second (Solders - Hursdi)	8049781 8049781		ADDITION OF		BRANCE BRANCE		Berrow .					
Samera Pagalatian Second (March - September)												
Personal of house population second	BOOT/R		BHT/R		Berry R		Her/E					
Poplation results for monotice (for the Alex Bound to online	BOCK/R:		MILTON:		ROCCUR:		MOTOR:					
undied psychia served as behavior by 949	ROCK/RC		10117/0C		RECOVE:	· ·	REAL OF					
	Beaker of		Beaker of		Banker of	Barge.	Banker of		Banker of	B		
annel Weber Barre be Tealer. Fill ander annelities in HC	Constations	Reason INCO	Constitute	Bases INCI	Constalless	1851		Bacar 18561		12151		
bibbibi												
edealed had he have												
and said Perlama											8017/81	
piederal												
Antheliat												
anini ya Malakina												
los Placolifal	-											-
una Aliadarah (Frankik, Part Ali	_					-		-	_	<u> </u>		-
of deals of the ball of the second		_		r		-				<u> </u>		-
CPE Annalai											BUT/B	_
Yeles for Isoners Helistics	Berry B			Reason Hilds		Acres 184					Record SPICE	
ald Real Audit Tabase Bard										4.00		
raidraffat Barrage Dag Demand (800)	8017781	[L 10		E 8.00		[1.00	0	
and Max Real dealed Values Ward	ROOM R	1.11	1017/00	1.00	RECOVER.	1.00	Ber/E	1.0	RECT/RT	1.00		
e fraite di datte												
Additional institutes from load	BOCK/R	1.00	MILLON.		BCO.C.	1.00	INCOME.	1.0	BRENCH:	1.0		
A.J. Researched Part Star Distanced - Kamura Ridg CEME - TPUL	800278		1017702							8.00		
POLAZAS		Here/H		#247/#1		Married Barried		BOOTTON T		BOOME.	INT/III	
ant Million for BISP CO (BEP - Epidemilian after a standard - Exploration in order)				#047/#C						BOOK .	#DIV/0!	
Reconcepted for Males (BRW)	Terrelat	MG	Terrelas	MS	Personalese.	MS	Persealers	MG	Presedent	HC	Record INSI	
consider for Main [64] is Too to and Table Remarks For Red										1.00		
	BOOT/R		1017/01	1.0	Berry B.	1.0	MART/R	1.0	BUTT/BI	1.00		
Charles Mar 1967	BEER/F		1107.07		BICO'T		BEET/F		BREAT.			
Territorial Flori Lannes (TFL)	Presedent	HC	Trenslere	HS	Terreler	HS	Transland	MC	Francisco	HC	Reaso INISI	
N.	1017/10		1017/00	1.0	Breed.		HEALT/R.		BPCC/R:	1.00		1.101
11.409	Berry				Brown		Here's		Berger	1.00		
Yoles Server Bederis of Servers												
	202		2828		2013		2010		2112			
Volce Investel/anothered from allow Invest PV1	112						219		2112			_
Yoles Insuelationshared free alkes Insuel PMI						1.00	219			1.00		-
X der handelikenskend frem dier hand PM met USar						1.0	215			1.00		
Voles Innoted condensed from effect Innot PVI wear IT flow wear IT flow	- 112					14	2151			10		i
Water Januar John Schutzehand frem Alter Januar 1993 ann Hillian ann Hillian ann Hillian Alffeld a gant Ryant an Henralter Sam	262						2151					1
Value Insurfationships of fear allow lossed PU1 sear Ullians sear Ullians sear Ullians all Of the insurfation of fear allow beams all Of the insurfation of fear allow beams	262					14	2151			10		1
Value Insurated constructions after Annual PCI and Utan and Utan and Utan Alf data specific grant and from after basis Alf data specific grant and from after basis Alf data specific grant and from after basis Value construction of the after Annual PCI	202	99 99 99 99		3333						55555		
Veloc Ional delenational from Alex Ional (PCI and Hane and Hane and Hane and Hane Million Specific Agentical from Alex Iona Million Specific Agentical for aller Ional (PCI Welco research (Fedd Ional) (2011) Welco research (Fedd Ional) (2011)	ni:						219					
Votes Innet Standard from the Innet PCI and Union and Union with Standard Standard from the Innet Mithda Standard Standard Standard Innet Mithda Standard Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet Standard Innet St				3355			213			100000000000000000000000000000000000000		
Value Insulationsheed for allow insule FML and the second second second second second second second second second		3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		39999			219					
Value Insulationship for the Insulation of FGL and Hills and Hills and Hills and Hills and Hills (Hild in signification for a data based (Hill and Hills) (Hill and Hills) (Hill and Hills) (Hill and Hill and Hill and Hill (Hill and Hill and Hill and Hill and Hill (Hill and Hill and Hill and Hill and Hill (Hill and Hill and Hill and Hill and Hill and Hill and Hill and Hill (Hill and Hill and H				9999			213					
Value located dataset of Loca Alton Locat PCI and Hamiltonia and Hamiltonia Hamiltonia (Hamiltonia) and Hamiltonia (Hamiltonia) (Hamiltonia) Altonia (Hamiltonia) (Hamiltonia) (Hamiltonia) Value constructional (Hamiltonia) Value (30		39999			213					
Value lossified associated frame alter a loss of PCL and Hanne Million and Hanne Million (Second Second Second Second Second Million Lossifications of Second Secon							2151					
Vede Loostid Gaussian							215					
Mark insulting and the second PCI and Table and and Table and							215					
Make insulation should be a first free set of the second PC second set of the second						E E E E E E E E E E E E E E E E E E E	2155					
Make benefit for and the fore the fore of												
Make insultationalisti faise illus insult PE insultation												
Kink neuroinformation of one of the least PET and the second of the sec												
More insurable and an analysis of the second PDI insurable and the se												



THE COMMONWEALTH OF MASSACHUSETTS WATER RESOURCES COMMISSION 100 Cambridge Street, Boston MA 02114

Policy for Developing Water Needs Forecasts for Public Water Suppliers and Communities and Methodology for Implementation December 13, 2007 Revised March 9, 2017

I. POLICY STATEMENT

It is the policy of the Commonwealth of Massachusetts that the Water Resources Commission (WRC) shall develop water needs forecasts for public water suppliers and communities seeking increased water withdrawals under the Water Management Act (WMA) and for other purposes as deemed appropriate by the Commission. As a result of the development of the water needs forecast, the WRC may make recommendations to the public water suppliers or communities regarding water use, system efficiency or other issues. Where such water needs forecasts may be pursued for actual withdrawal use by a public water supplier or community, at a minimum, permitting by the Massachusetts Department of Environmental Protection (MassDEP) is required.

