WATER NEEDS FORECAST PROPOSED ADDITION

MA Water Resources Commission

March 9, 2017

OVERVIEW

1) Summary of Water Needs Forecast Method
2) Summary of Special Method for Cape Cod
3) Cape & Islands Water Management Act Permit Renewal- Summary of Concerns
4) Proposed Option to Address Seasonality and Uncertainty

WATER NEEDS FORECASTING POLICY & METHODOLOGY

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 May 1, 2009

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.

http://www.mass.gov/dcr/watersupply/WaterNeedsForecastingMethology.htm

STEPS IN DEVELOPING A WATER NEEDS FORECAST

18-month process (DCR)

- Obtain & review data & identify gaps
- Notice in *Environmental Monitor*
- Discuss data with water supplier/town planner
- Issue draft forecast
- Take input at basin-wide public meeting
- Revise draft forecast if needed
- Water supplier includes forecast in WMA permit application

DATA OBTAINED FROM WATER SUPPLIER

1. Water-use data based on actual metering for 3 to 5 years (from ASRs):
   - Residential
   - Nonresidential
   - Treatment plant losses (if any)
   - UAW
2. Population served by water system (including out of town and seasonal)
3. Anticipated significant changes in water use

DATA SOURCES

Data	Sources
Current Town-wide Population	U.S. Census
Population Projections	DOT & Regional Planning Agency, UMass Donahue Institute
Current Employment	DOT & Regional Planning Agency
Employment Projections	DOT & Regional Planning Agency

NONRESIDENTIAL WATER USE

Data		Sources
Metered Non-residential volumes (+ CEMU)	→	As reported by PWS on ASRs
Current employment	→	DOT & RPAs
Employment forecasts	→	DOT & RPAs

NONRESIDENTIAL WATER USE: PROJECTION METHOD

- Average metered nonresidential Average Day Demand, 2004 – 2008, X
  Employment growth rate for each planning period

Base NonRes ADD, 2004 – 2008 (mgd)	Employment Growth Rate, 2008 – 2015	Projected NonRes ADD, 2015 (mgd)
1.0	5%	1.05

PROJECTIONS BUFFER:

Projections assume that future water consumption will reflect current trends in RGPCD and UAW.

Projections include a 5% buffer amount, based on 2030 projection, to be used at DEP's discretion

SEASONAL POPULATION: DATA SOURCES

- Federal census: No. of vacant homes
- 2008 Survey of Cape Cod Second-Home Owners:
  - Avg. # days home is in use (including renters)
  - Avg. # people in home (including renters)

EXAMPLE: MID-CAPE COMMUNITY

Month	# pp in home	# days in use	ave daily pop
January	2	6.4	0.41
February	2	6.3	0.45
March	2.1	7	0.47
April	2.5	8.9	0.74
May	2.8	11.5	1.04
une	3.5	16.6	1.94
July	4.5	23.7	3.44
August	4.5	23.2	3.37
September	3.1	14.4	1.49
October	2.5	10.8	0.87
November	2.3	7.6	0.58
December	1.9	6.9	0.42

(4.5 X 23.2) / 31 = 3.37

SEASONAL POPULATION: ANNUALIZING

2000 US census vac hh units	Jan pop	Feb pop	March pop	April pop	May pop	June pop	July pop	Aug pop	Sep pop	Oct pop	Nov pop	Dec pop	Annual seasonal pop
5,392	2,226	2,426	2,557	3,999	5,601	10,443	18,550	18,159	8,023	4,696	3,142	2,280	6,842

(= 5,392 * 3.37)

Total Town Population = 47,821 + 6,842
(year-round) (seasonal)

CAPE & ISLAND PWS WITH WNF

CAPE PWSs
Barnstable Fire District
Centerville-Osterville-Marston Mills
Cotuit Fire District (Water Department)
Hyannis Water Supply Division
Bourne Water District
Brewster Water Department
Chatham Water Department
Dennis Water District
Falmouth Water Department
Harwich Water Department
Mashpee Water District
Orleans Water Department

CAPE PWSs
Sandwich Water District
Yarmouth Water Department

Islands PWSs
Edgartown Water Department
Oak Bluffs Water District
Tisbury Water Works
Wannacomet Water Company

2015 COMPARISON: SEASONAL VS. NON-SEASONAL USE

Community	Annual Average Day Demand (ADD) in MGD	Summer (June -Aug.) Average Day Demand (SADD) in MGD	Percent Increase from ADD to SADD
Concord	2.10	2.78	32%
Lenox	0.56	0.69	23%
Scituate	1.59	2.04	28%
Chatham	1.46	2.74	88%
Provincetown	0.67	1.07	60%
Oak Bluffs	1.12	2.06	84%

PROPOSED ADDITION TO WNF

Buffer Amount

A 5% buffer is added to the projected ADD for the final five-year period of the water needs forecast. This 5% buffer is intended as a contingency in the event that unanticipated growth results in a need for additional water during the forecast period.

For communities with significant seasonal populations (Cape Cod and the Islands), a 10% buffer may be added to the projected ADD for the final five-year period of the water needs forecast. This 10% buffer would accommodate uncertainties related to large seasonal population fluctuations.

Note that the standard conditions are still applicable, baseline will still be calculated based on 2003-2005 volumes and all withdrawals over baseline require mitigation where feasible.