Martha's Vineyard Statistical Profile
February 2019

www.mvcommission.org

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ENERGY AND ENVIRONMENT

The Vineyard's natural beauty and isolation from the mainland draw many visitors and residents to its shores. But that sets up a delicate balance. Among other things, the Island's sole-source aquifer gets its water entirely from rain, and the aquifer in turn supplies all the potable water to Island towns. Substances that enter the ground eventually find their way into coastal and freshwater ponds, which support shellfish and other sensitive species. Concerns surrounding the Island's natural environment have grown along with increasing development since the 1970s.

Floodplain area (land only) by town, 2016
Source: MVC, based on FEMA Flood Zones

FEMA floodplains are areas designated by the federal government as having a certain risk of flooding (see definitions below). The floodplain area in each town in Dukes County roughly corresponds to the town's total land area, with the exception of Gosnold, which has 13 percent of the county's floodplain. Gosnold also has the highest percentage of buildings within a floodplain (16.9 percent), followed by Edgartown (8.9 percent), Oak Bluffs (8.8 percent), and Tisbury (8.2 percent).

	Total	Percent
Aquinnah	3,341	5%
Chilmark	11,349	18%
Edgartown	16,644	27%
Gosnold	8,257	13%
Oak Bluffs	4,578	7%
Tisbury	4,091	6%
West Tisbury	15,678	24%
Total	***64,626***	***100%***

Buildings in FEMA floodplain and percent of total, 2016*
Source: MVC, based on FEMA Flood Zones; MassGIS (structures); assessors' data (status and use)

	AE	VE	0.2%	AMFH
Aq.	21 (3.6%)	15 (2.6%)	NA	549 (93.8%)
Chil.	71 (3.3%)	13 (0.6%)	NA	2,039 (96%)
Edg.	319 (5.3%)	91 (1.5%)	128 (2.1%)	5,482 (91%)
Gos.	40 (15%)	5 (1.9%)	NA	222 (83.1%)
O.B.	262 (5.7%)	82 (1.8%)	58 (1.3%)	4,191 (91.2%)
Tis.	154 (4.4%)	73 (2.1%)	58 (1.7%)	3,205 (91.8%)
W.Tis	13 (0.4%)	NA	NA	2,893 (96.6%)
Total	***880*** (4.4%)	***279*** (1.4%)	***244*** (1.2%)	***18,581*** (92.6%)

* Structures based on aerial photos in the following years:
Aquinnah (2013)
Chilmark (2016)
Edgartown (2016)
Gosnold (2013)
Oak Bluffs (2016)
Tisbury (2016)
West Tisbury (2016)

Any building with a roofprint greater than 400 square feet; could be a house, business, shed, barn, garage, etc.

Flood zone codes

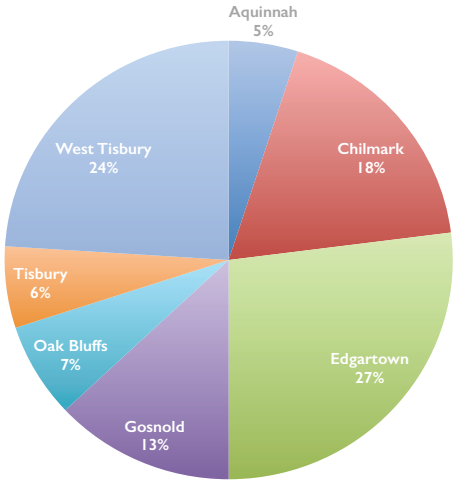
VE = 1-percent-annual-chance flood event (100-year floodplain; velocity zone)

AE = 1-percent-annual-chance flood event (100-year floodplain)

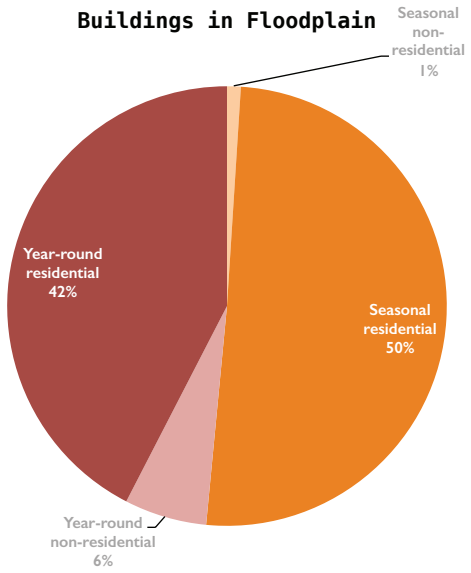
0.2% annual chance of flood hazard (500-year floodplain)

AMFH (area of minimum flood hazard) is outside the 100-year and 500-year floodplains

Floodplain Area (Percent of Total)



Buildings in Floodplain

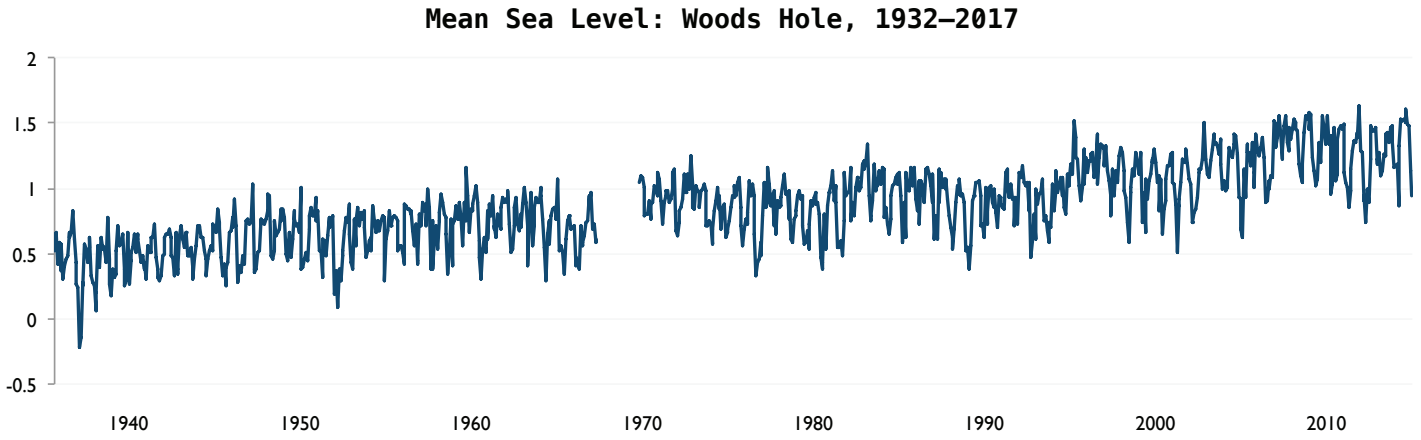


Mean sea level (rising trend), various years up to 2017*
Source: National Oceanic and Atmospheric Administration

* Increase per year in millimeters.

Mean sea level is calculated as the mean of hourly heights observed over the National Tidal Datum Epoch (1983–2001). Between 1932 and 2017, the mean sea level at Woods Hole increased an average of 2.86 mm per year—more than Boston, but less than Nantucket. The Northeast in general has a much higher rate of sea level change than globally, and projections for the region also exceed those for the planet.

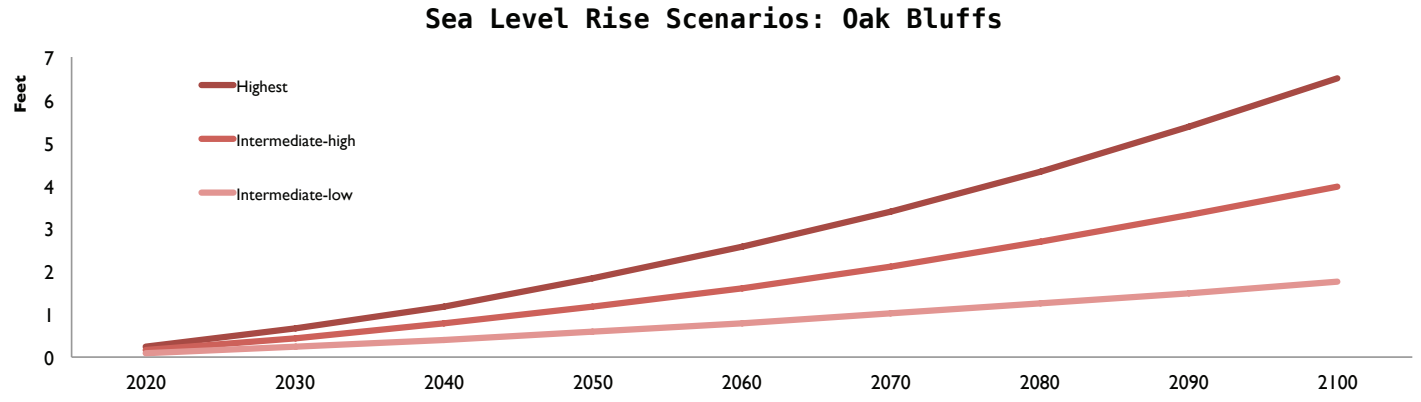
Boston (1921–1917)	2.82mm (+/–) 0.16
Nantucket (1965–2017)	3.63mm (+/–) 0.36
Woods Hole (1932–2017)	2.86mm (+/–) 0.17



Sea level rise: Projected scenarios for Oak Bluffs, including subsidence: 2020–2100
Source: Oak Bluffs Climate Change Vulnerability Assessment and Adaptation Plan, 2016

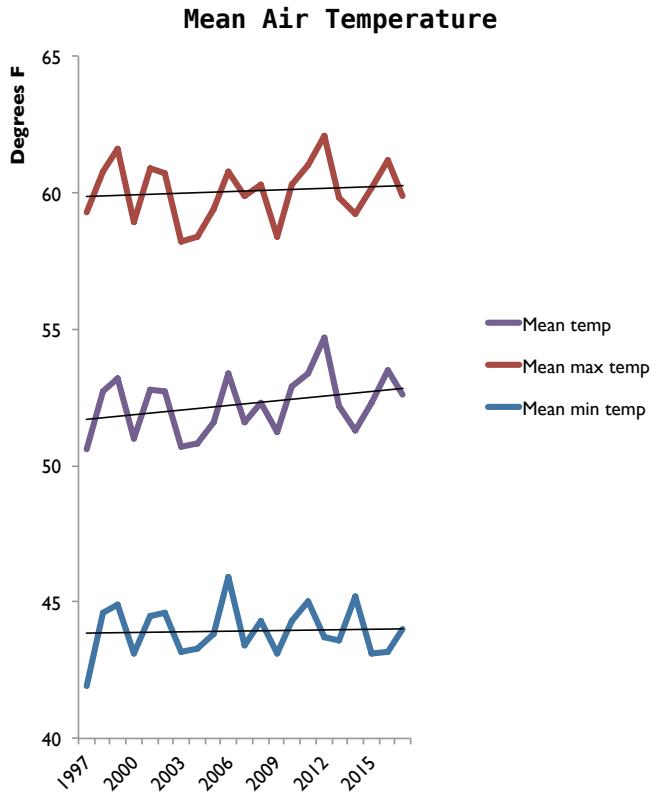
The 2016 Coastal Vulnerability Assessment and Adaptation Plan identifies various future scenarios for sea level rise in Oak Bluffs, which in every case exceed global projections. The report, by the Kleinfelder engineering firm, selects the "highest" scenario to conduct its analysis, since it allows for a broader range of scenarios to consider; and targets 2030 and 2070 as the appropriate planning horizons. According to the report, projected sea-level rise by those years would endanger much of the town's critical infrastructure.

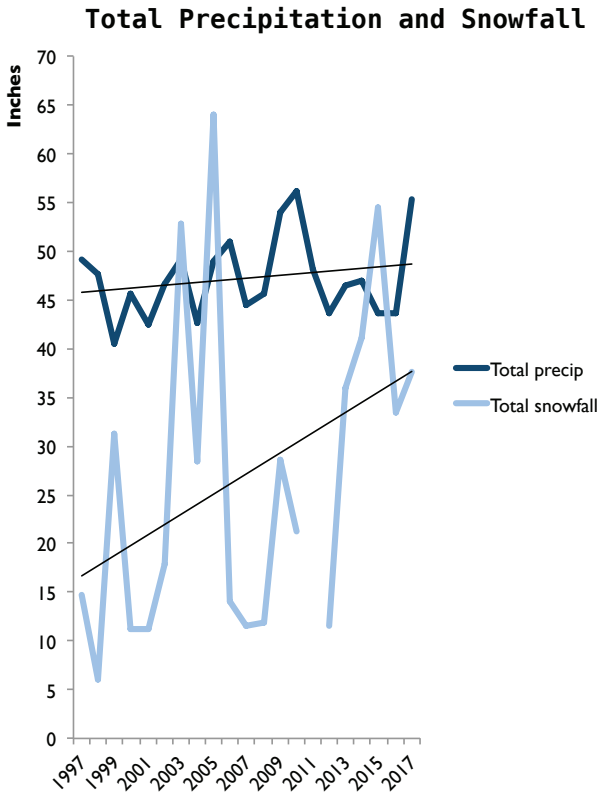
	2020	2030	2040	2050	2060	2070	2080	2090	2100
Total relative SLR: highest	0.24	0.66	1.19	1.82	2.56	3.39	4.33	5.37	6.52
Total relative SLR: intermediate high	0.16	0.44	0.77	1.16	1.61	2.12	2.68	3.33	3.98
Total relative SLR: intermediate low	0.09	0.24	0.4	0.59	0.79	1.01	1.24	1.5	1.77



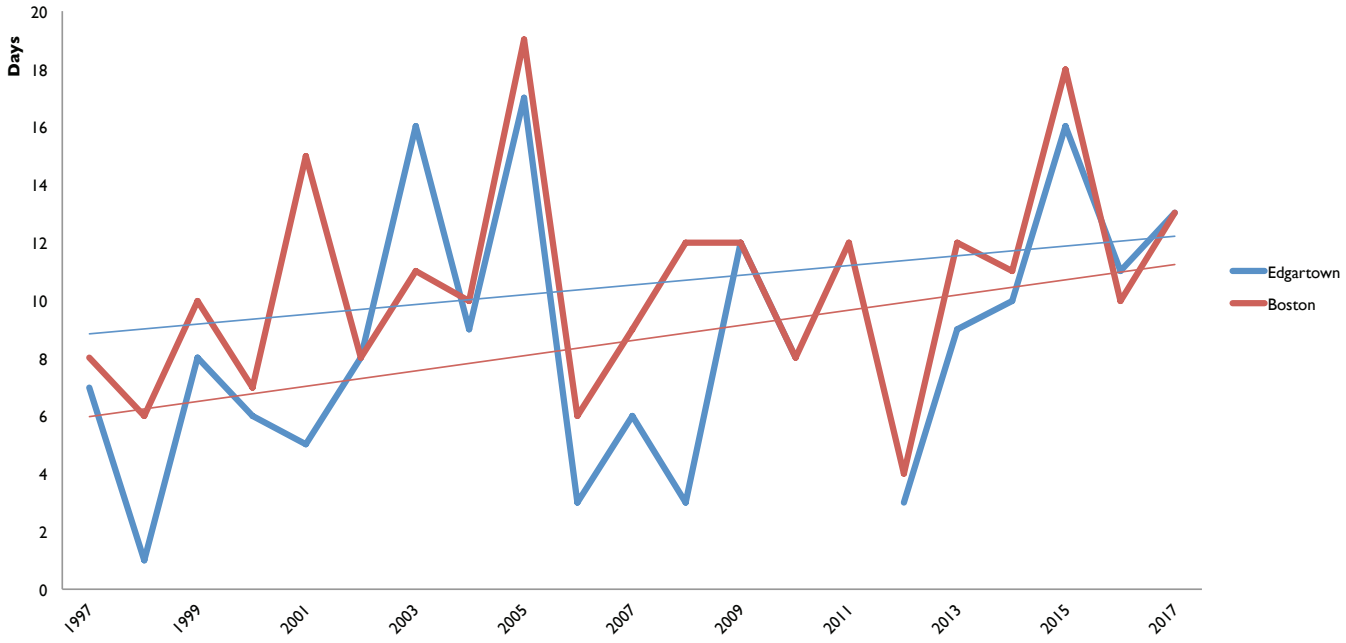
Annual mean, mean maximum and mean minimum air temperature; total precipitation and snowfall (with trendlines): Edgartown, 1997–2017
Source: National Oceanic and Atmospheric Administration

In the last 20 years, mean temperatures in Dukes County have increased faster than those in the state, region and country. The mean minimum temperature in particular increased at more than double the rate nationwide, and the mean maximum rose at more than double the rate of the Northeast.





Number of days with snow depth greater than 1 inch: Edgartown and Boston, 1997–2017
Source: National Oceanic and Atmospheric Administration

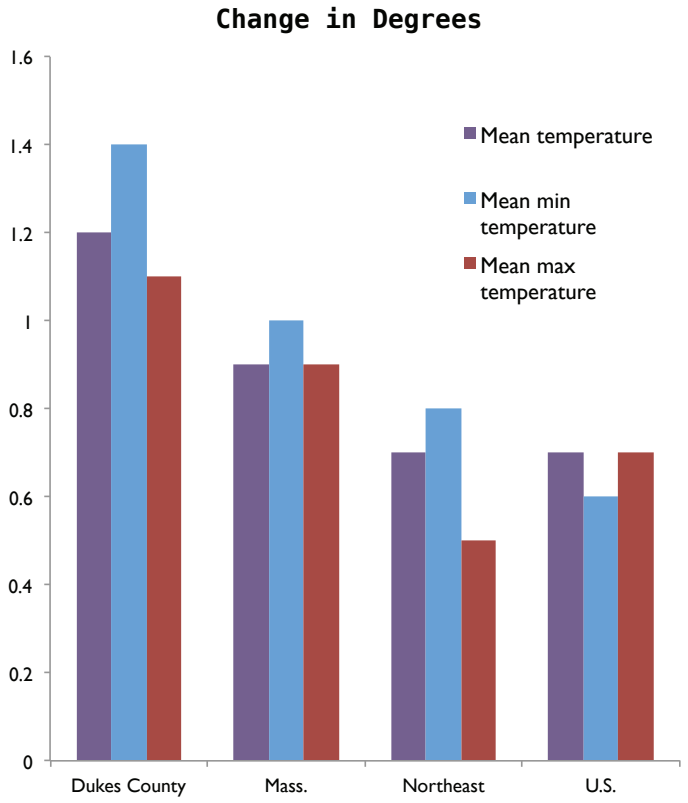


Temperature (F) and precipitation change: 20-year trend: Edgartown, 1997–2017*

Source: National Oceanic and Atmospheric Administration

	Island	State	North-east	U.S.
Mean	+1.2°	+0.9°	+0.7°	+0.7°
Minimum	+1.4°	+1°	+0.8°	+0.6°
Maximum	+1.1°	+0.9°	+0.5°	+0.7°
Precipitation	+1.5″	-2″	+2.5″	+1.4″

*Trendlines created by NOAA via a nine-point binomial filter (see glossary)



Ozone level exceedances: Island, 2004–2017

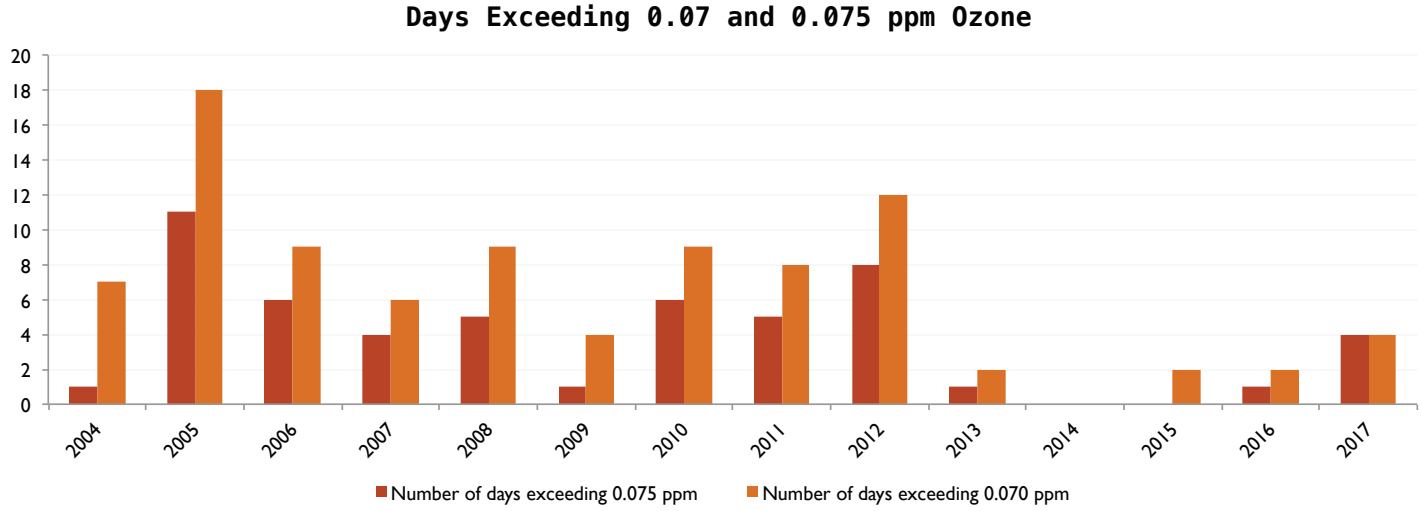
Source: Environmental Protection Agency

The EPA's ozone air quality index (AQI) ranges from 0 to 500, where 100 generally indicates the threshold for unhealthy amounts of ozone in the air—an average of about 0.07 parts per million over eight hours. EPA data for the Island is logged by the Wampanoag Environmental Laboratory and triangulated with other monitoring stations in Truro and Fairhaven.

2015 AQI Breakpoints (EPA):

	AQI value	8-hour average (PPM)
Good	0–50	0–0.054
Moderate	51–100	0.055–0.07
Unhealthy for sensitive groups	101–150	0.071–0.085
Unhealthy	151–200	0.086–0.105
Very unhealthy	201–300	0.106–0.2

	1st high		2nd high		3rd high	
2007	0.094	26 May	0.091	25 May	0.088	17 Jun
2008	0.101	9 Jun	0.1	29 Jul	0.087	17 Jul
2009	0.078	26 Aug	0.075	20 May	0.074	21 May
2010	0.1	4 Jul	0.086	18 Jul	0.081	31 Aug
2011	0.113	22 Jul	0.093	8 Jun	0.082	7 Jun
2012	0.1	21 Jun	0.094	20 Jun	0.083	29 Jun
2013	0.079	18 Jul	0.071	16 Jul	0.065	24 Jun
2014	0.066	17 Aug	0.062	8 Jun	0.059	11 May
2015	0.074	12 Jul	0.074	31 Aug	0.068	20 Jul
2016	0.078	25 May	0.074	26 May	0.069	6 Jul
2017	0.096	13 Jun	0.095	3 Jul	0.083	12 Jun



Enterococci levels by beach, various time ranges up to August 2018

Source: Massachusetts Bureau of Environmental Health

See map, page 104

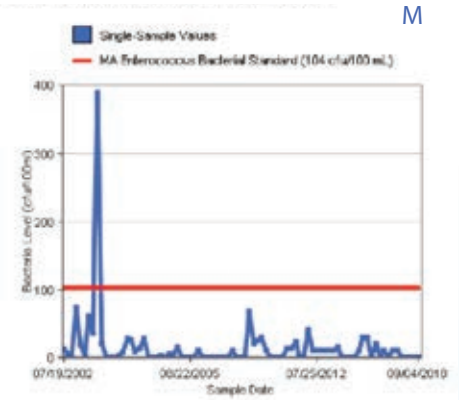
The presence of Enterococcus, a bacteria found in people's gastroinestinal tracts, is the federal standard for water quality at saltwater beaches. Enterococci levels are tested by collecting water samples, separating the bacteria and promoting its growth in a laboratory. If the resulting colonies exceed 104 "colony forming units" per 100 milliliters of water (the red line the graphs below), the beach in question will be closed to swimmers. Because the levels in individual water samples may vary widely from day to day, beaches that exceed the limit are often retested and opened soon after the initial results.

M = Tested monthly W = Tested weekly

Aquinnah

Lobsterville Beach

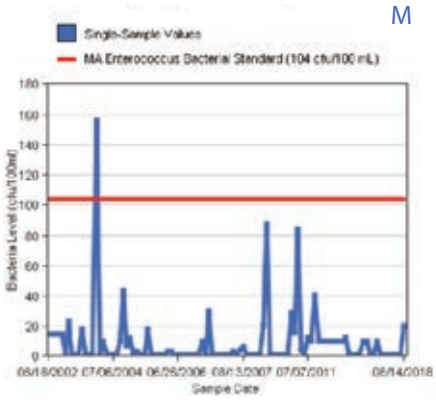
M



Chilmark

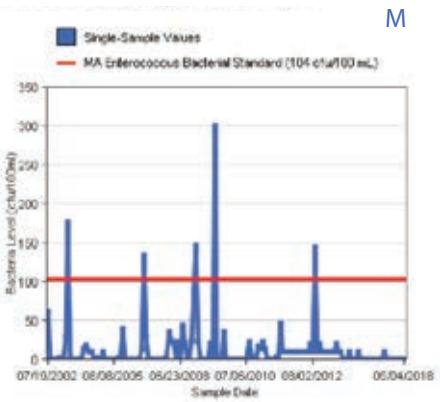
Moshup Beach

M



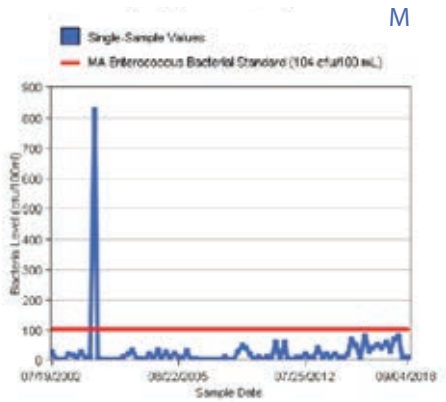
Philbin Beach

M



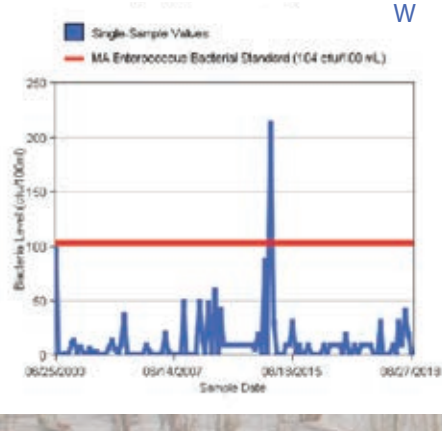
Red Beach

M



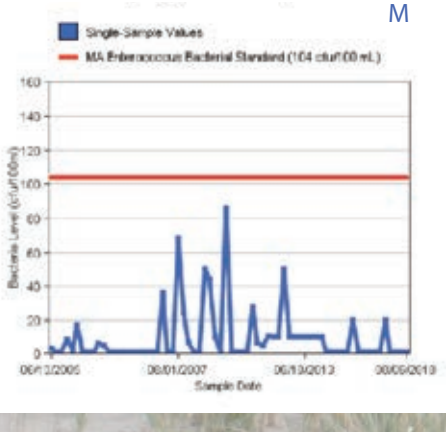
Great Rock Bight

W



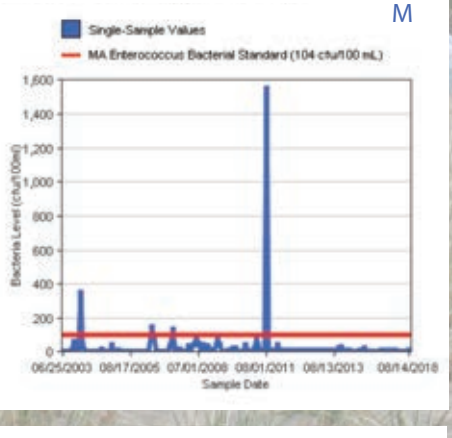
Menemsha

M



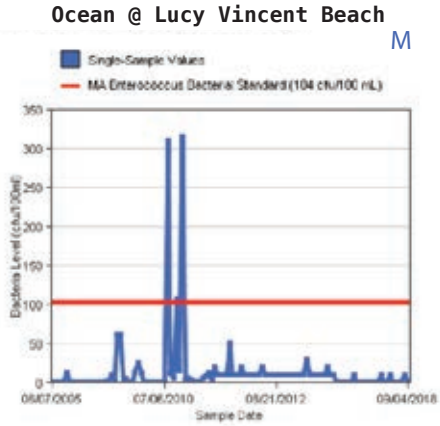
Ocean @ Chilmark Pond Preserve

M



Ocean @ Lucy Vincent Beach

M



Ocean @ Squibnocket Beach

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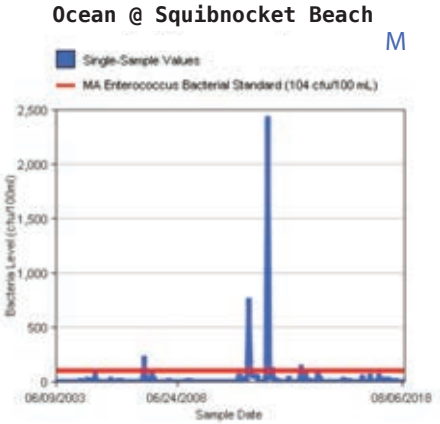
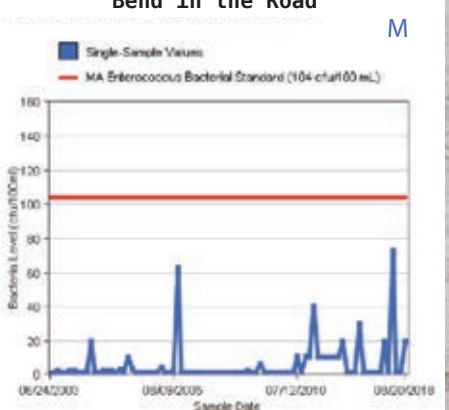


Edgartown

Bend in the Road

M



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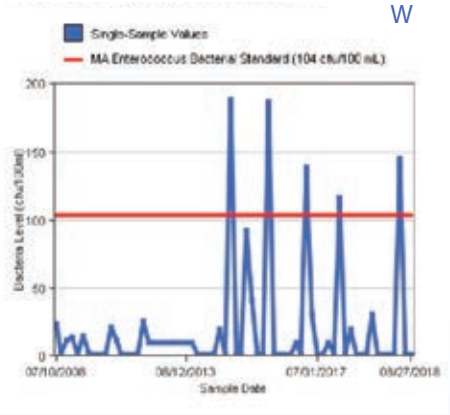
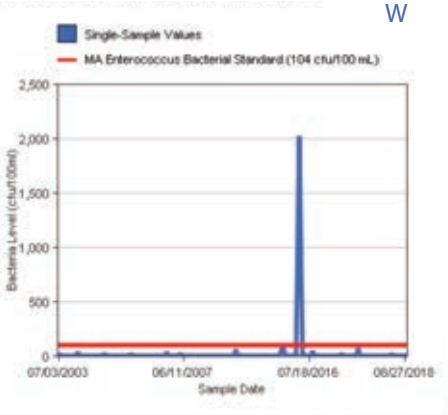
Chappy Beach Club

W



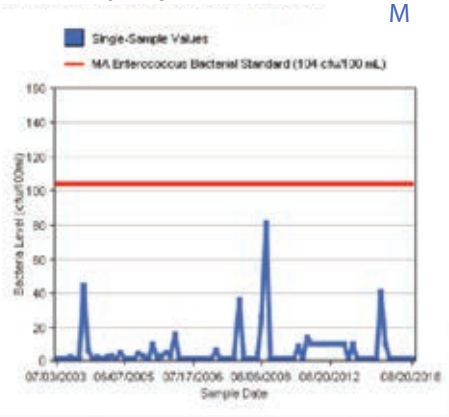
Chappy Point

W



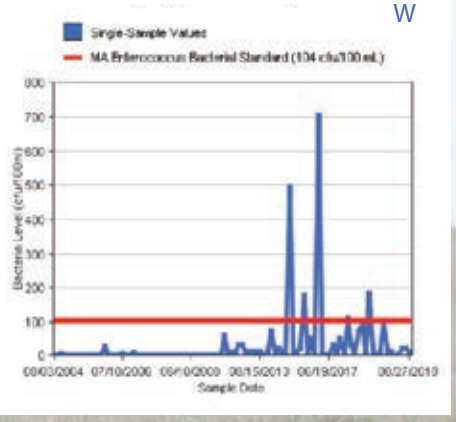
Joseph Sylvia State Beach

M



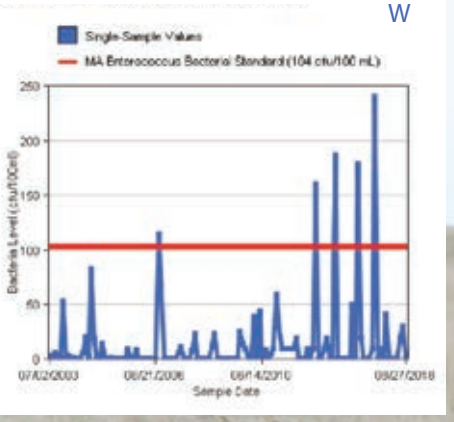
Norton Point Beach

W



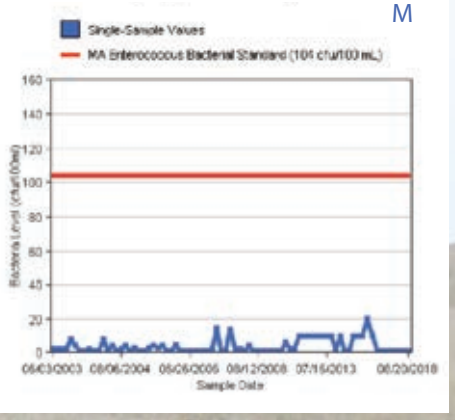
Ocean @ Edgartown Great Pond

W



South Beach State Park (East)

M



South Beach State Park (Middle)

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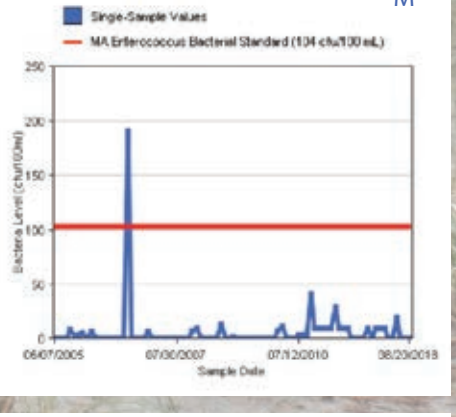

South Beach State Park (West)

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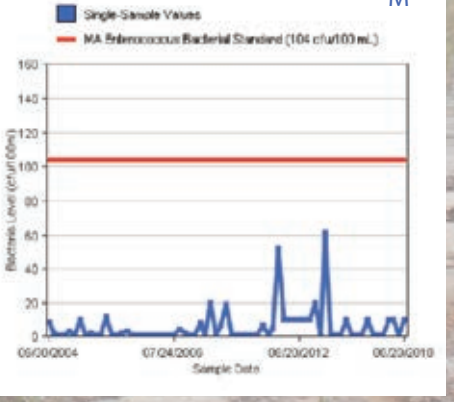

Wasque

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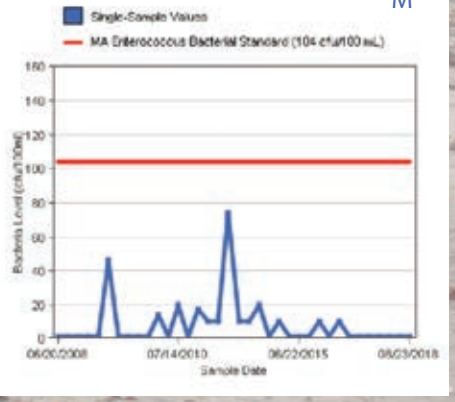

Eastville Town Beach (Drawbridge)

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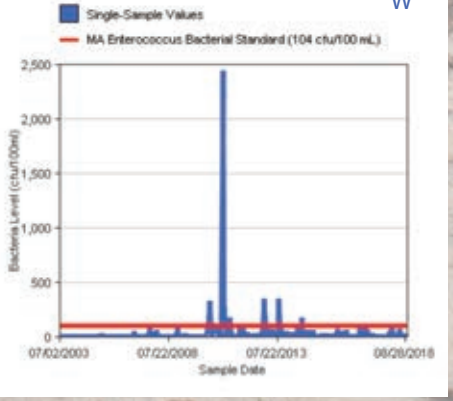

Eastville Town Beach (Harbor)

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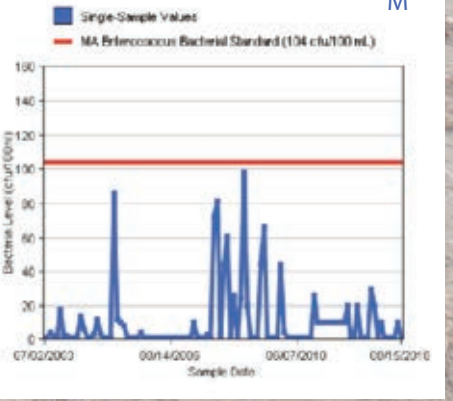
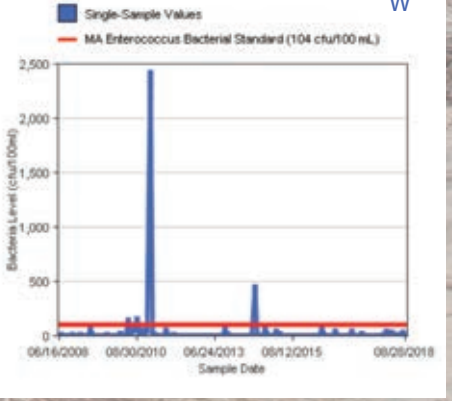


Inkwell Beach

W



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Joseph Sylvia State Beach (Big Bridge)

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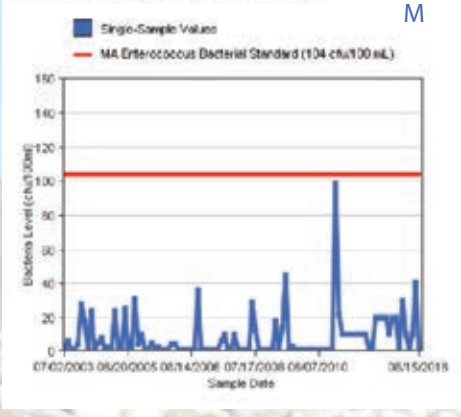

Joseph Sylvia State Beach (Sound)

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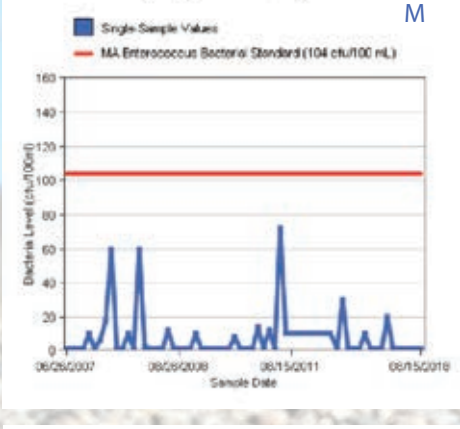

Madeiros Cove (Sailing Camp Park)

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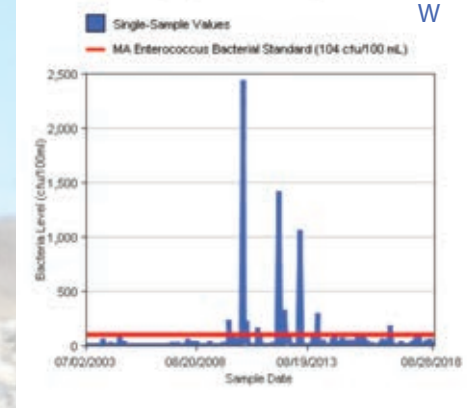

Marinelli (Jetty) Beach

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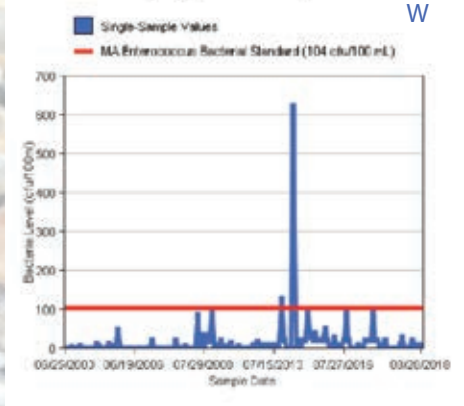

Pay Beach

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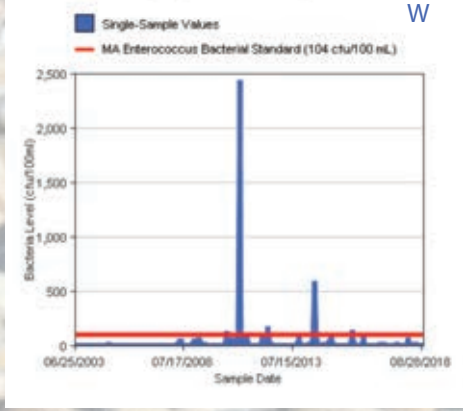
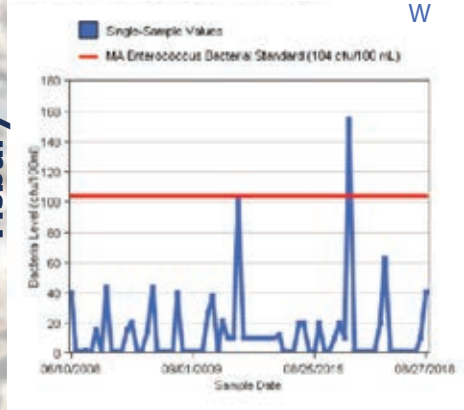


Hilman's Point

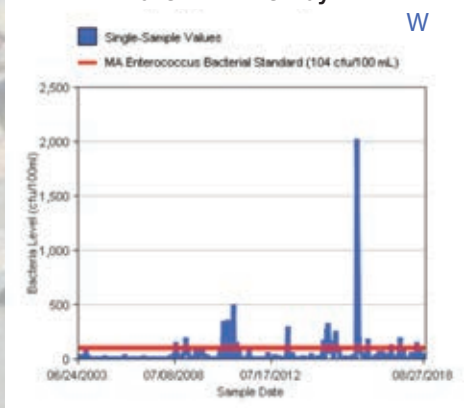
W



Tisbury

Owen Little Way

W



Owen Park

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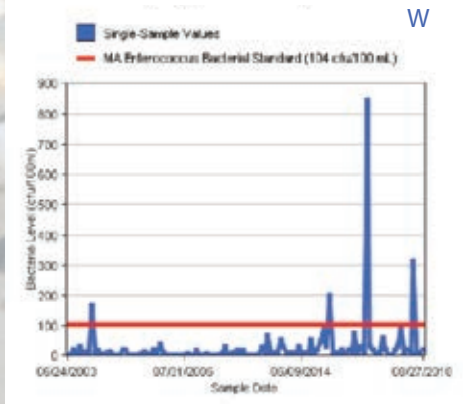

Sound @ Wilfred's Pond Preserve

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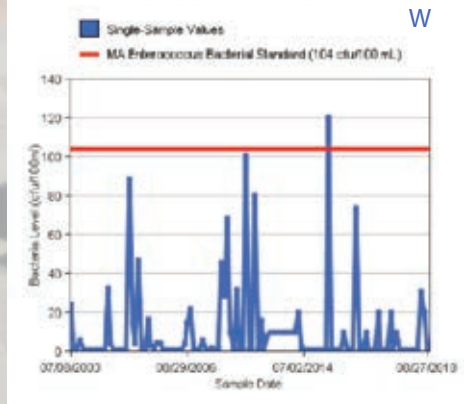

Tashmoo Beach

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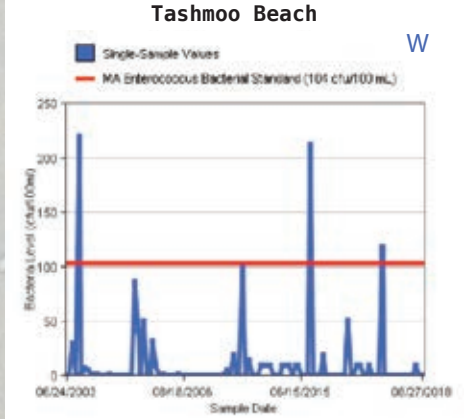

Tashmoo Cut

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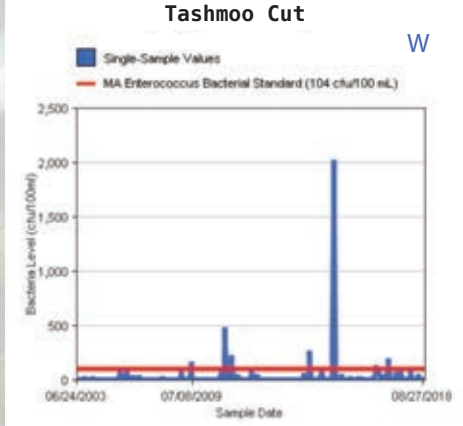

Vineyard Harbor Motel

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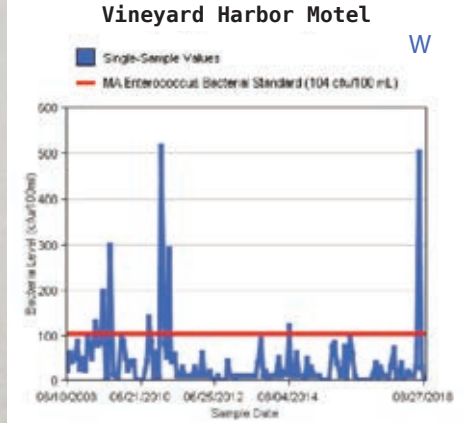

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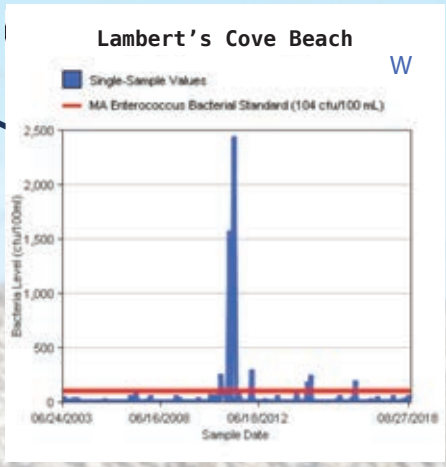
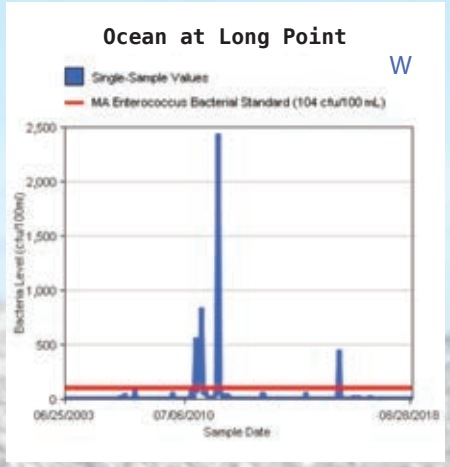
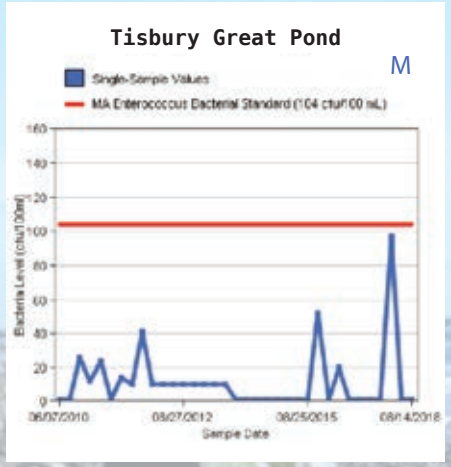
West Tisbury

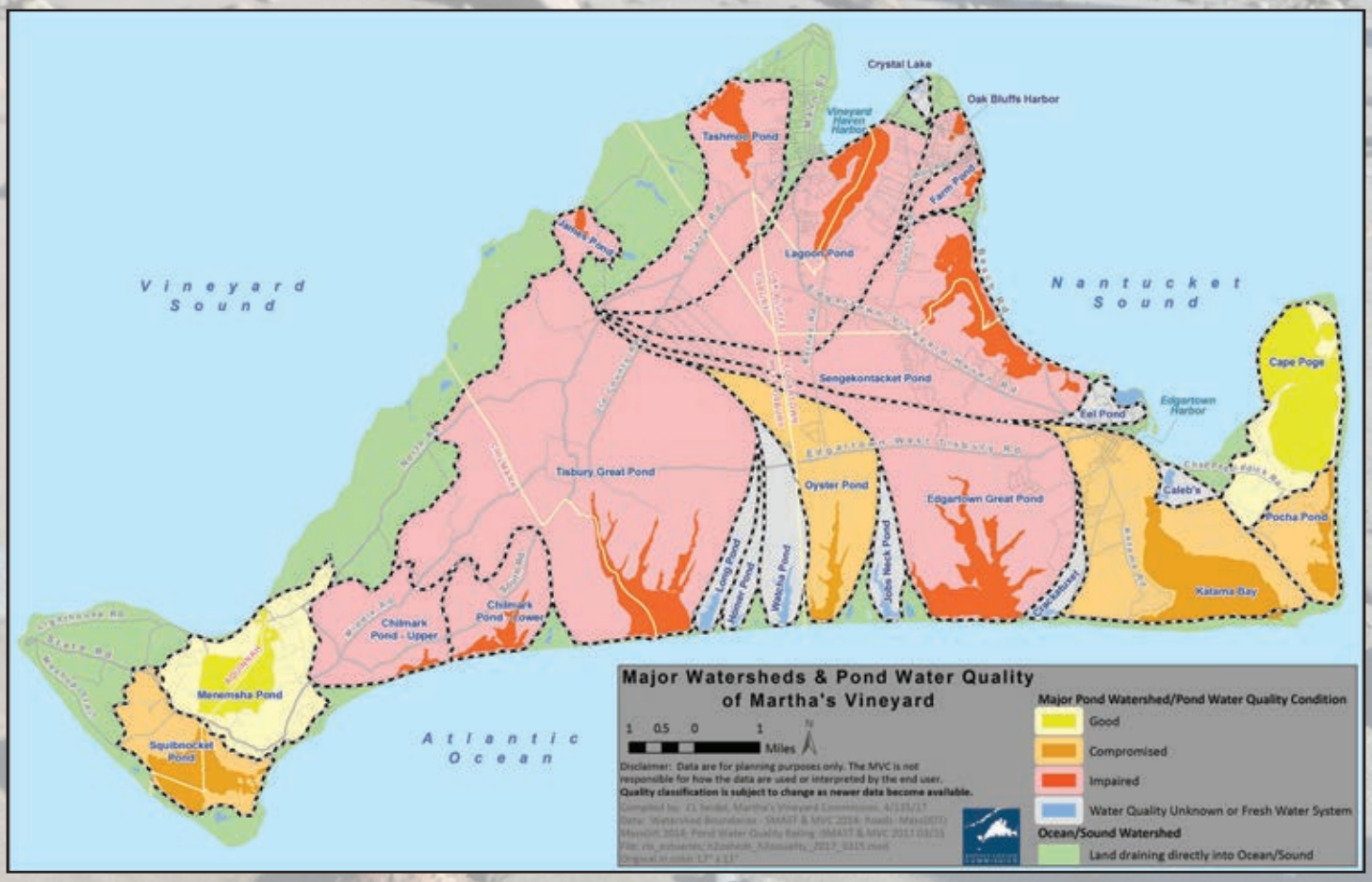






Coastal ponds: Impairment status and nitrogen limits
Source: MVC and Massachusetts Estuaries Project, compiled in 2017

Nearly every coastal pond on the Vineyard is impaired to some degree by an excess of nitrogen, which fuels harmful algal blooms and reduces habitat for plants and animals. The Massachusetts Estuaries Project, a collaboration between the state Department of Environmental Protection and the University of Massachusetts, has studied most of the Island's major estuaries and assigned load reduction targets for nitrogen entering the ponds. The total maximum daily loads (TMDLs) are non-binding but serve as a tool for communities to take steps to preserve the health of their ponds.



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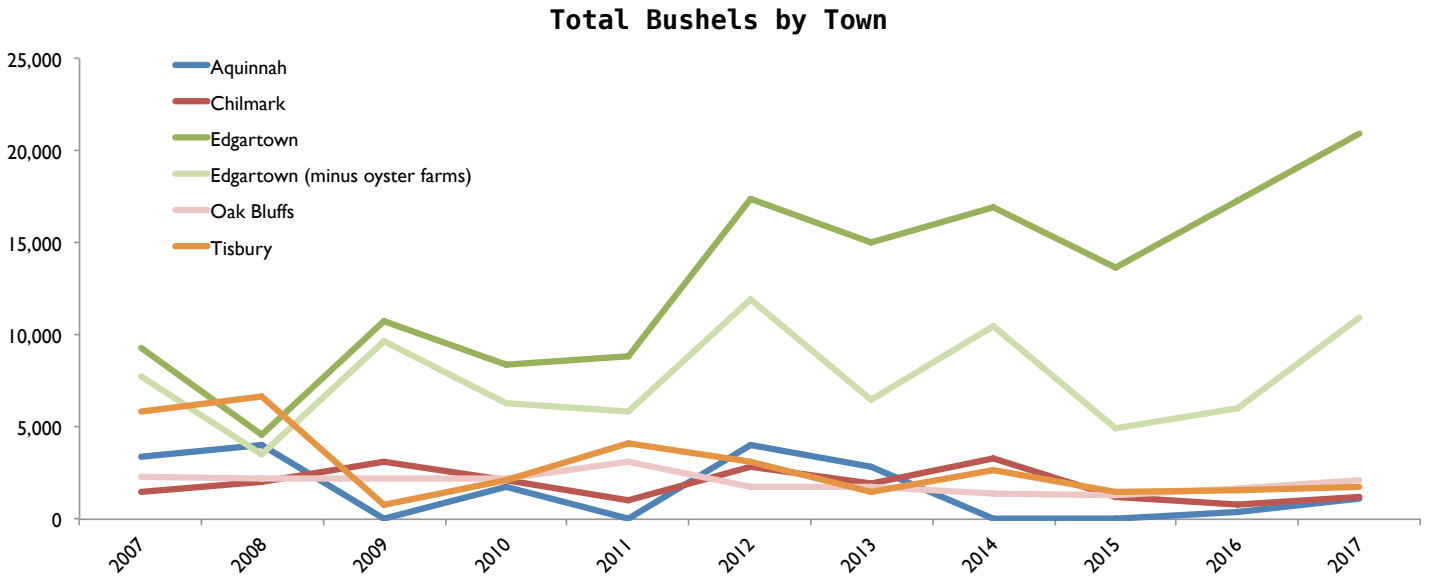
System	Pond area (acres)	Eelgrass condition	Rating	Nitrogen load limit (kg per year)
Cape Pogue	1,560	Fair	Good	45,500
Chilmark Pond	241	None	Impaired	5,653
Edgartown Great Pond	890	Variable	Impaired	7,686
Farm Pond	42	Fair	Impaired	1,604
James Pond	40	None	Impaired	200
Katama Bay	1,700	Patchy	Compromised	54,700
Lagoon Pond	573	Poor	Impaired	11,177
Menemsha Pond	670	Good	Good	31,600
Oak Bluffs Harbor	36.3	None	Impaired (Sunset Lake)	6,026
Oyster Pond	200	None	Compromised	1,800
Pocha Pond	115	None	Compromised	5,680
Sengekontacket Pond	716	Poor	Impaired (Major's Cove and Trapps)	11,051
Squibnocket Pond	600	None	Compromised	3,400
Tashmoo Pond	269	Poor	Impaired	6,244
Tisbury Great Pond	845	None	Impaired	13,578

Annual shellfish harvests by town and type (commercial and recreational bushels), 2007–2017
Source: Town reports, town shellfish departments

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aquinnah	3,378	3,987	0	1,726	0	4,000	2,814	0	0	396	1,097
Chilmark	1,460	2,009	3,087	2,151	1,030	2,892	1,971	3,302	1,167	798	1,172
Edgartown	9,273	4,587	10,729	8,426	8,878	17,427	14,978	16,948	13,688	17,294	20,966
Edgartown minus oyster farms	7,723	3,524	9,629	6,301	5,838	11,927	6,478	10,468	4,938	6,044	10,966
Oak Bluffs	2,259	2,177	2,218	2,221	3,095	1,727	1,725	1,414	1,307	1,638	2,150
Tisbury	5,803	6,635	785	2,123	4,105	3,105	1,505	2,688	1,525	1,607	1,761
Total	***31,903***	***24,927***	***28,457***	***24,958***	***24,957***	***43,090***	***31,484***	***36,834***	***24,640***	***29,793***	***40,129***

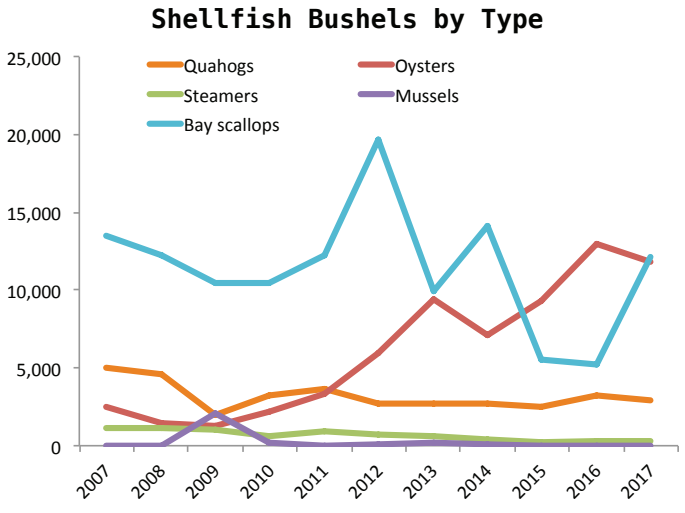


Nitrogen load at time of MEP	Projected load	TMDL (kg per day)	Load reduction required
11,200	12,600	UA	0%
6,241	6,389	15.5	22% (Chilmark east)
11,053	17,763	46.06	18%
2,179	2,610	4.13	26%
600	1,050	UA	67%
23,200	30,800	UA	0%
17,081	24,062	74.07	35%
12,950	16,860	UA	0%
4,834	5,926	22.63	25%
3,600	5,200	UA	50%
2,500	3,300	UA	0%
13,713	18,306	34.56	19.41% overall
3,920	4,400	UA	13%
9,163	13,203	35.55	32%
16,783	19,325	62.78	19%

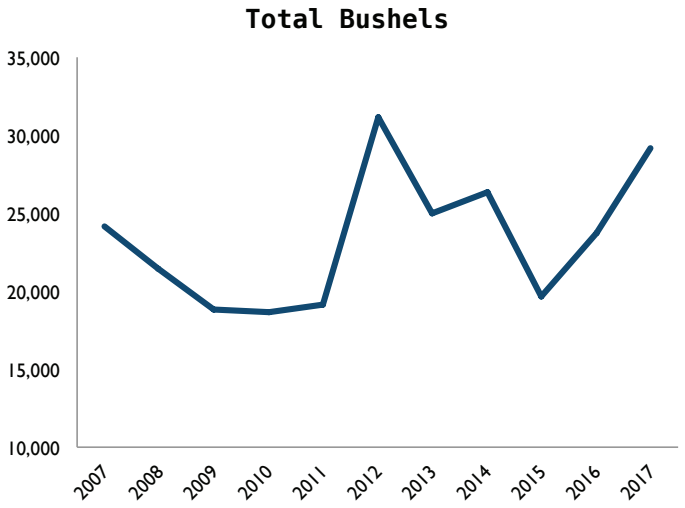
Between 2007 and 2017, total shellfish harvests across the Island declined, except in Edgartown, where the number of commercial and recreational bushels more than doubled, to 20,966. Even excluding the 12 commercial oyster farms on Katama Bay, Edgartown harvests grew by about 3,243 bushels, or 42 percent. Contributing to the increase is the generally high water quality in Edgartown's coastal ponds.

Reported species:

	Quahogs	Oysters	Steamers	Mussels	Bay scallops
Chilmark	●	●	●	●	●
Tisbury	●		●		●
Oak Bluffs	●	●	●		●
Edgartown		●			●
Aquinnah					●



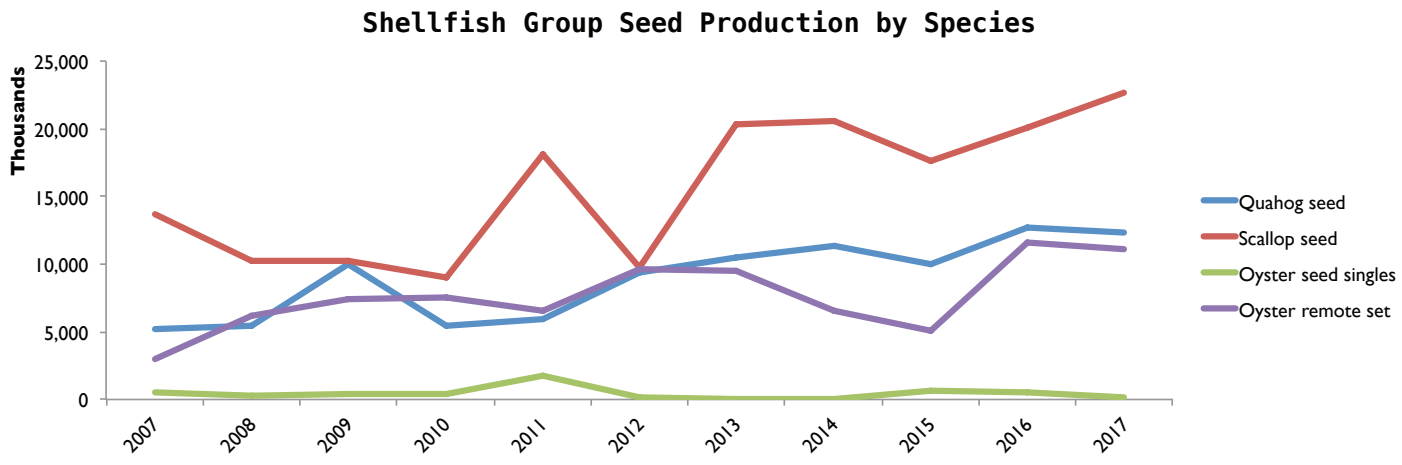
	Quahogs	Oysters	Steamers	Mussels	Scallops
2007	4,993	2,492	1,141	0	13,547
2008	4,636	1,458	1,102	0	12,226
2009	1,966	1,273	1,044	2,125	10,411
2010	3,189	2,228	609	170	10,451
2011	3,654	3,307	963	25	12,244
2012	2,735	5,995	701	66	19,654
2013	2,740	9,420	656	232	9,945
2014	2,716	7,079	412	56	14,089
2015	2,543	9,340	226	0	5,578
2016	3,187	13,018	286	21	5,221
2017	2,925	11,805	309	15	12,093

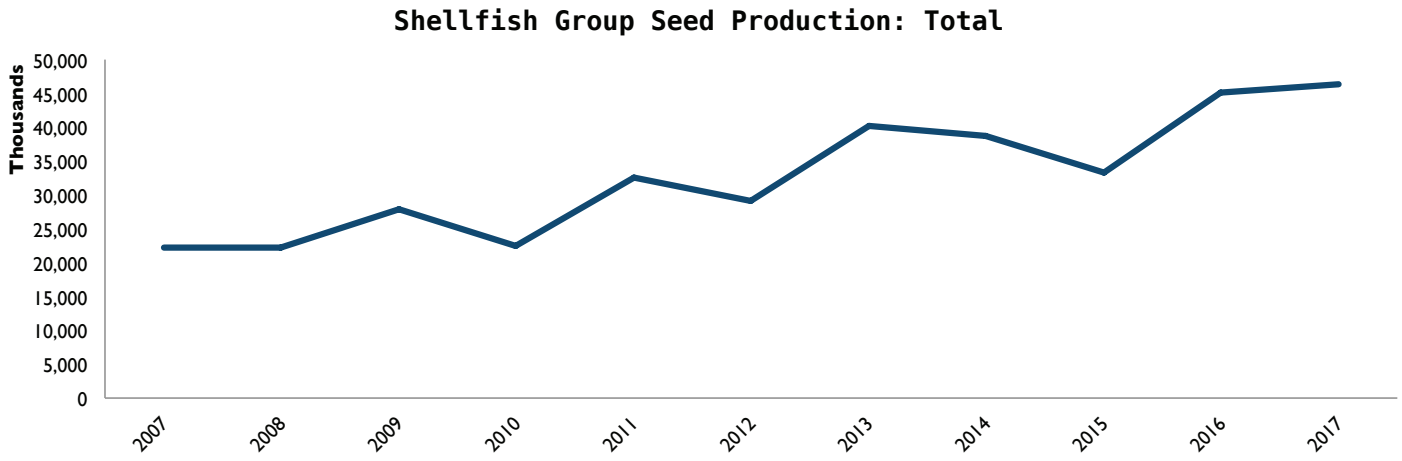


Martha's Vineyard Shellfish Group seed production by town and species, 2007–2017

Source: Martha's Vineyard Shellfish Group

Martha's Vineyard Shellfish Group seed production more than doubled between 2007 and 2017, from 22.3 million to 46.3 million individual shellfish. Excluding West Tisbury, which does not have a commercial harvest, each Island town typically receives the same number of 1mm quahogs and scallop seeds per year, with some variation as noted below.

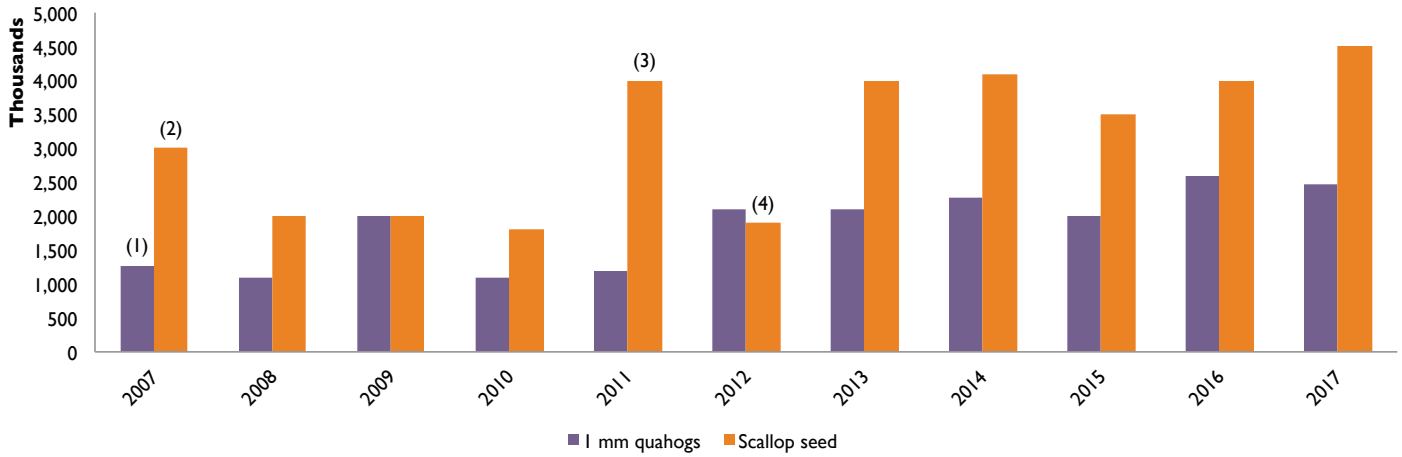




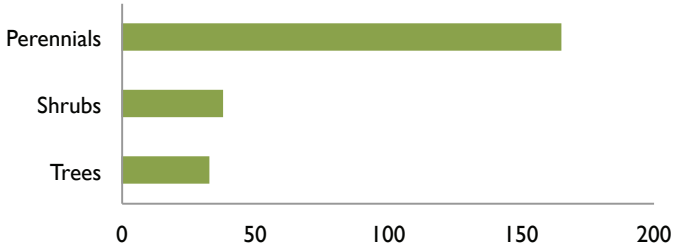
Martha's Vineyard Shellfish Group: Number of 1 mm quahogs and scallop seed distributed to each town, 2007–2017

Source: Martha's Vineyard Shellfish Group

(1) Aquinnah = 100,000
(2) Aquinnah = 1,500,000
(3) Oak Bluffs = 2,000,000
(4) Oak Bluffs = 1,050,000



Native plants by type: Martha's Vineyard
Source: Polly Hill Arboretum

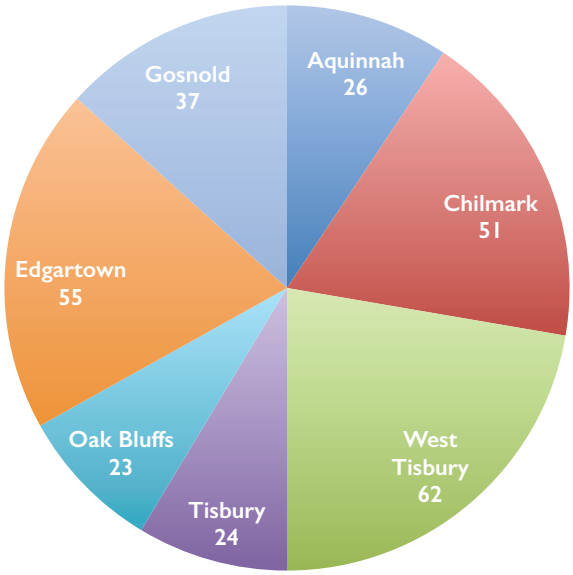


Rare species by town
Source: Natural Heritage and Endangered Species Program

The Natural Heritage and Endangered Species Program lists 427 native plant and animal species across the state. Species may be classified as endangered, threatened or of special concern. The distribution of rare species in Dukes County corresponds roughly to the amount of open space in each town, although Aquinnah has a proportionally higher number, which may relate to its quality and diversity of open space.

Water table elevations: Outwash plain aquifer, October 1991
Source: United States Geological Survey, Effects of Simulated Ground-Water Pumping and Recharge on Ground-Water Flow in Cape Cod, Martha's Vineyard and Nantucket Island Basins, Massachusetts

The Environmental Protection Agency designates Martha's Vineyard as a sole-source aquifer since its only source is rainfall. More accurately, the Island's western moraine includes countless small aquifers at varying depths, while the central outwash plain is more uniform. Water table elevations may vary by several feet over the course of a year, reaching their height in spring and early summer. Because of the slow rate of geologic change, the numbers here are likely still representative, although the effect of increasing rainfall and other factors over the years is unknown.



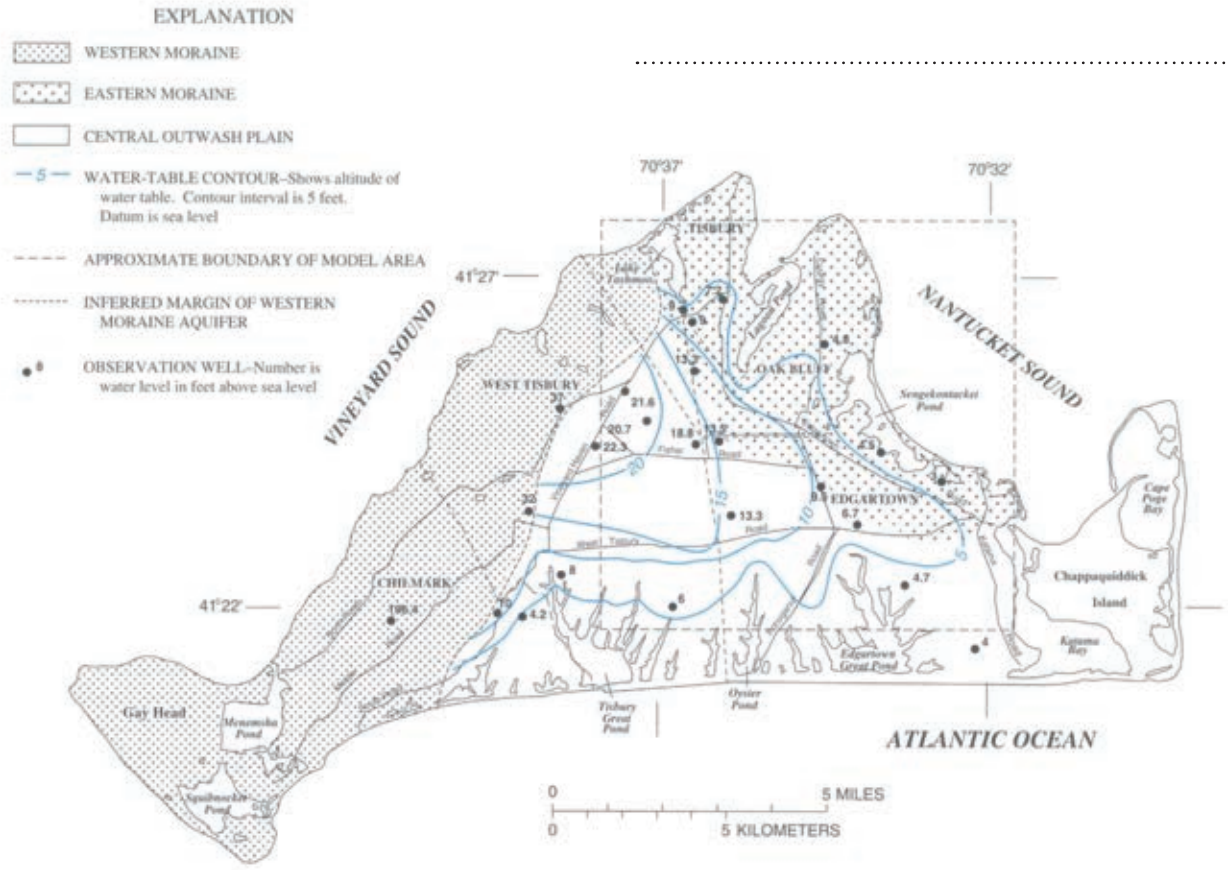


Figure 6. Water-table configuration on October 28–30, 1991, surficial geology, and location of modeled area, Martha's Vineyard Basin, Massachusetts.

Public wells per town

Massachusetts Bureau of Geographic Information

See map, page 114

As defined by the state, public wells are those with at least 15 service connections, or an average of at least 25 customers for at least 60 days of the year. That may include wells operated by towns, schools and other institutions. The state Bureau of Geographic Information (MassGIS) maps 44 of those wells on the Vineyard. See glossary for additional definitions.

	Community	Non-community	*Total*
Aquinnah	0	1	*1*
Chilmark	0	11	*11*
Gosnold	0	0	*0*
Edgartown	5	1	*6*
Oak Bluffs	5	0	*5*
Tisbury	3	0	*3*
W. Tisbury	0	18	*18*
County	*13*	*31*	*44*

Private wells per town (estimate), 2017

Calculations based on data from MVC, water departments

	Dwellings minus public water connections
West Tisbury	2,722
Edgartown	2,568
Chilmark	2,046
Aquinnah	485
Tisbury	367
Oak Bluffs	31
Island	*8,219*

Public water consumption (million gallons), 2007–2017

Source: Island water departments and Wampanoag Tribe

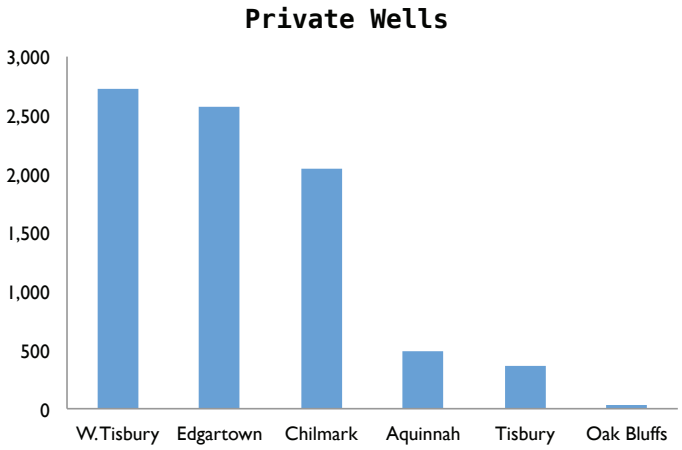
	Edgartown	Oak Bluffs	Tisbury	Tribe (est.)
2007	355.77	UA	275.68	1.1
2008	308.08	UA	240.43	1.1
2009	263.75	UA	210.53	1.1
2010	330.6	UA	245.69	1.1
2011	301.63	UA	225.61	1.1
2012	326.55	UA	250.86	1.1
2013	UA	UA	254.23	1.1
2014	341.45	372.56	267.63	1.1
2015	398.96	418.01	298.75	1.1
2016	370.28	409.43	307.73	1.1
2017	339.07	349.73	271.97	1.1

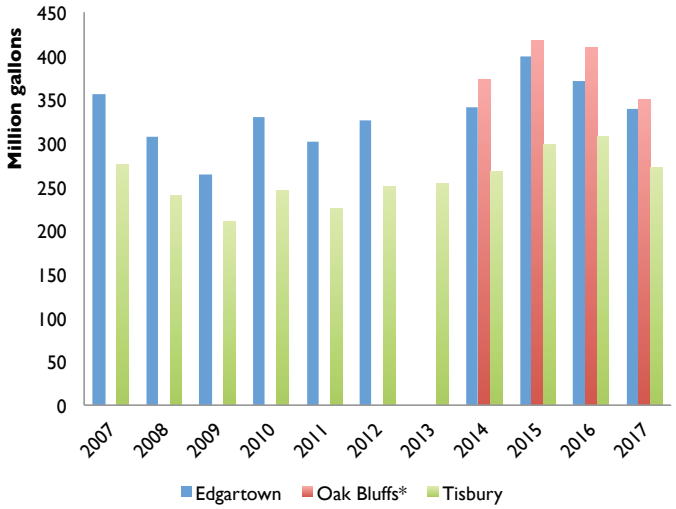
Public water and wastewater connections (municipal and tribal only), 2017

Source: Water and wastewater departments, Wampanoag Tribe

Wastewater connections	
Edgartown	1,142
Oak Bluffs	722
Tisbury	132
Tribe	33
Total	2,029

Water connections	
Edgartown	3,298
Oak Bluffs	4,295
Tisbury	2,745
Tribe	33
Total	10,371





* Reliable data for Oak Bluffs prior to 2014 was unavailable; 2013 data missing for Edgartown.

Seagulls circle over the former Edgartown Landfill

Inactive landfills, 2010

Source: Department of Environmental Protection, Bureau of Waste Preventions, Solid Waste Program

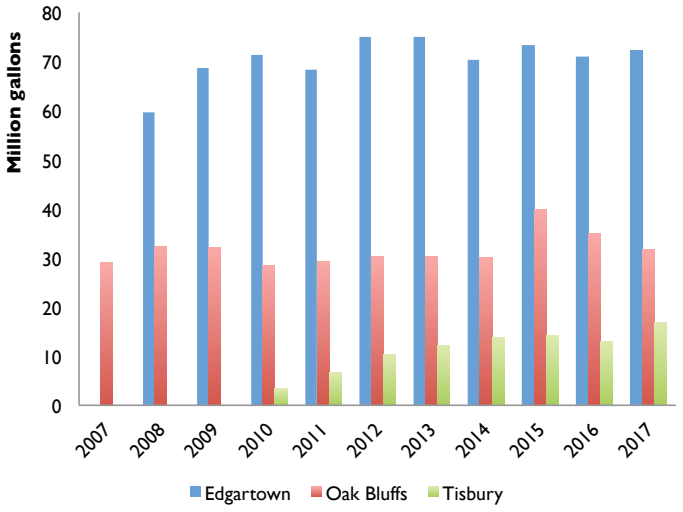
See map, page 113

All 11 of the landfills in Dukes County have closed or become inactive since 1993. None of the landfills includes a protective liner, now required by the state, and only six are known to have been capped after they closed. The municipal landfills in Dukes County were replaced by eight transfer stations, where garbage and recycling are collected and shipped to facilities on the mainland.

Wastewater volume per town (million gallons), 2007–2017

Source: Island wastewater departments

	Edgartown	Oak Bluffs	Tisbury	Tribe (est.)
2007	UA	29	UA	1
2008	59.56	32.4	UA	1
2009	68.6	32.1	UA	1
2010	71.4	28.5	3.37	1
2011	68.25	29.3	6.65	1
2012	75	30.2	10.32	1
2013	74.89	30.3	12.13	1
2014	70.37	30	13.71	1
2015	73.28	39.84	14.22	1
2016	71.1	35.02	13.02	1
2017	72.4	31.68	16.94	1



	Type	Acres	Opened/ closed	Status	Liner	Cap
Aquinnah Landfill	Municipal	2	1969–1993	Closed	Not lined	Capped 1998
Chilmark Landfill	Municipal	8.3	1953–2004	Closed	Not lined	Capped 2004
Chappaquiddick Landfill	Municipal	1	UA	Inactive	Not lined	Not capped
Edgartown Landfill	Municipal	19	1935–1995	Closed	Not lined	Capped 1999
Gosnold Landfill	Municipal	1	?–1996	Inactive	Not lined	Not capped
Oak Bluffs Landfill	Municipal	12	1890–1996	Inactive	Not lined	Partial cap
Tisbury Landfill	Municipal	13.9	1920–1994	Closed	Not lined	Capped 2000
Tisbury Stump Landfill	Stump landfill	UA	UA	Inactive	Not lined	Not capped
Olsen Bros. Stump Landfill	Private	UA	UA	Inactive	Not lined	Unknown
Rogers Pit	Private	3.3	1990–?	Inactive	Not lined	Not capped
West Tisbury Landfill	Municipal	5	1945–1996	Closed	Not lined	Capped 1997

Solid waste volume (tons): Island, 2008–2016

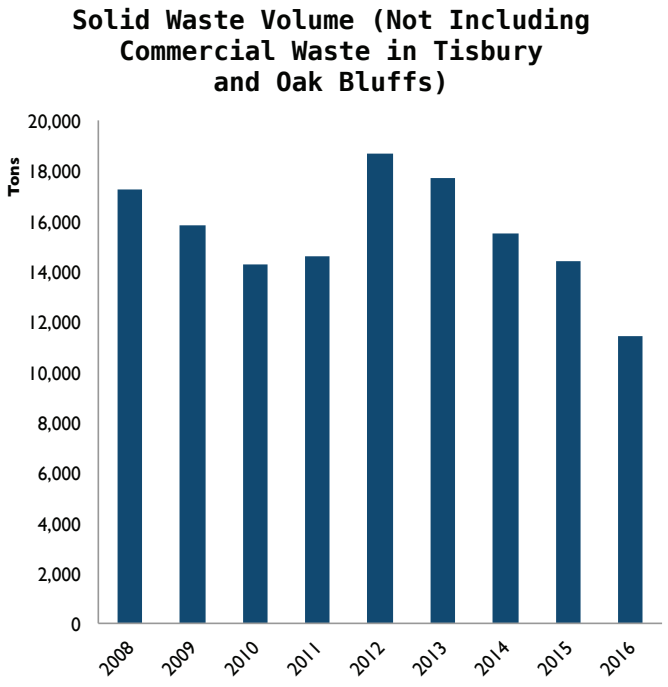
Source: Martha's Vineyard Refuse Disposal and Resource Recovery District, Oak Bluffs highway department; 2017 Islandwide Organics Feasibility Study

As of 2016, Vineyard trash went to a variety of facilities on the mainland. The Martha's Vineyard Refuse District, which includes Edgartown, West Tisbury, Chilmark and Aquinnah, shipped its trash to Covanta (formerly SEMASS) in Rochester to be incinerated, and its recycling to several locations, including E.L. Harvey in Westborough for plastic cans, glass, paper and cardboard; Champion City Recovery in Brockton for wood; and other locations for appliances, electronics, tires and metal. The Oak Bluffs-Tisbury district used a similar mix of recycling facilities, and sent its trash to the Crapo Hill landfill in Dartmouth and New Bedford. A decline in solid waste tonnage in the Martha's Vineyard Refuse District in 2014 was the result of ABC Disposal Services shifting its delivery of commercial trash to the Oak Bluffs-Tisbury district.

MVRDRRD	2008	2009	2010	2011	2012	2013	2014	2015	2016
Processed and shipped to Covanta or the Bourne Landfill	12,110	11,934	10,704	10,545	11,788	10,700	8,848	8,500	7,000
Recycled construction material sent to New England Recycling					2,788	3,200	3,260	2,500	1,000
Recycled or recovered on-Island	3,094	2,140	1,871	2,476	2,459	2,149	1,833	1,913	1,915
Household participation in hazardous waste collection day	*630*	*558*	*534*	*500*	*550*	*500*	*500*	*500*	*500*

Oak Bluffs-Tisbury district *(volume of commercial waste per year was unavailable)*	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total residential	1,088	891	916	835	836	842	813	755	777
Co-mingles (recycling)	123	133	116	135	127	142	131	131	129
Newspaper	144	98	67	78	86	84	71	73	60
Cardboard	47	48	78	49	55	60	62	54	49
Total (minus O.B.-Tisbury commercial waste)	***16,606***	***15,244***	***13,752***	***14,118***	***18,139***	***17,177***	***15,018***	***13,926***	***10.930***

Islandwide Organics Feasibility Study estimate for 2016 (tons shipped off-Island for incineration or burial): 19,000



Estimated annual residential food waste on Martha's Vineyard and potential savings from processing food locally

Source: 2017 Islandwide Organics Feasibility Study

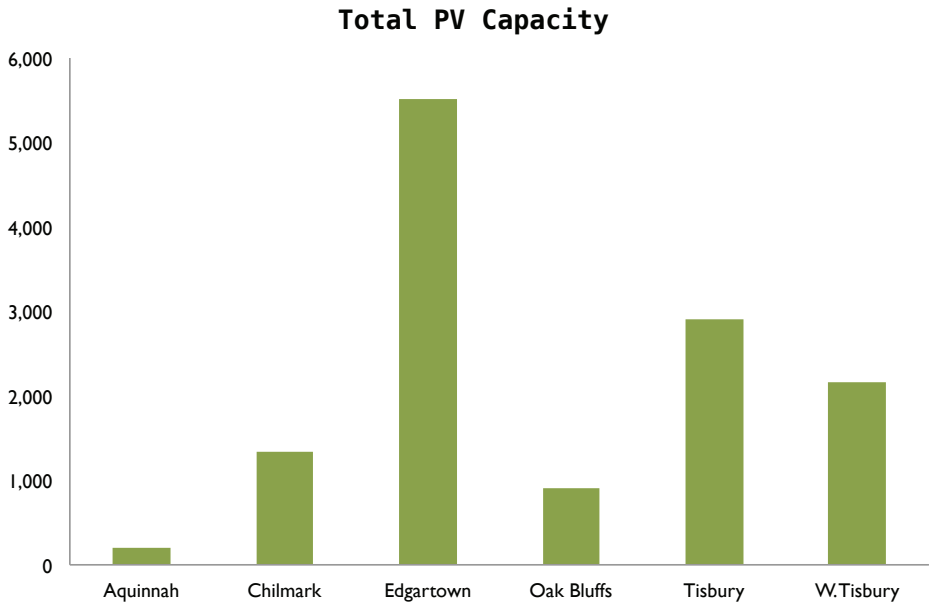
Food waste from year-round population	1,963 tons
Food waste from summer population	2,881 tons
Total yearly food waste	4,844 tons

Dispose off-Island	Process locally	Total tons trash/year	Est. tons food waste	Annual savings
$96/ton	$52/ton	19,000	6,500	$286,000

New photovoltaic system capacity (DC, kW): County, 2003–2017*
Source: Massachusetts Clean Energy Center

New photovoltaic system capacity on the Vineyard has grown exponentially since around 2003. Eighty percent of the solar units on the Island are in Edgartown, Tisbury and West Tisbury, with the largest portion (about 42 percent) in Edgartown.

2003	24.94
2004	43.19
2005	22.35
2006	35.45
2007	50.7
2008	55.54
2009	96.54
2010	115.78
2011	331.82
2012	1564.68
2013	627.7
2014	5676.94
2015	781.34
2016	1806.1
2017	1933.27



* Includes all solar PV systems fully registered in production tracking system.

Under the state's renewable portfolio standard (RPS), each regulated electricity provider with retail customers in the state must provide 15 percent of its electricity from renewable sources by 2020. The RPS was adopted in 2002 and later expanded to include separate standards for Class I and Class II renewable energy units. Class-I units, which may include geothermal, solar, wind, biomass, and other technologies, are those built after Dec. 31, 1998. Solar carve-out units are those built after Dec. 31, 2008, and solar carve-out II units were built after Dec. 31, 2013. All categories may include residential, commercial, agricultural or other solar units.

Eligible class I renewable generation units: County, 2018
Source: Massachusetts Department of Energy Resources

	Residential	Commercial, office	Agricultural	Other	Nameplate capacity
Aquinnah	5	2	0	0	69.65
Chilmark	41	6	1	0	507.475
Edgartown	34	8	1	6	3,874.973
Gosnold	1	0	0	0	2.96
Oak Bluffs	13	4	0	0	93.905
Tisbury	21	5	0	4	2313.8
W.Tisbury	42	5	0	0	676.112
Total	***157***	***30***	***2***	***10***	***7,538.875***

Solar carve-out II qualified units (qualified and operational): County, 2018

Source: Massachusetts Department of Energy Resources

	Residential[1]	Multi-fam residential[2]	Municipal/ gov/public	Commer-cial/office	Industrial	College/ industry	Agricultural	Retail	Nameplate capacity
Aquinnah	17	0	0	0	0	0	0	0	118.220
Chilmark	80	0	1	2	0	0	0	0	838.759
Edgartown	108	0	0	7	2	1	2	1	1,765.697
Gosnold	0	0	1	0	0	0	0	0	347.760
Oak Bluffs	53	1	0	4	1	0	0	0	780.780
Tisbury	67	0	0	3	0	0	0	0	580.716
W. Tisbury	87	0	0	6	0	0	0	0	1,454.736
Total	*412*	*1*	*2*	*22*	*3*	*1*	*2*	*1*	*5,886.668*

[1] Up to three dwellings per building.

[2] Four or more dwellings per building.

Not present in Dukes County: Class II-qualified renewable generation units, class II waste energy qualified generation units, APS qualified generation units.

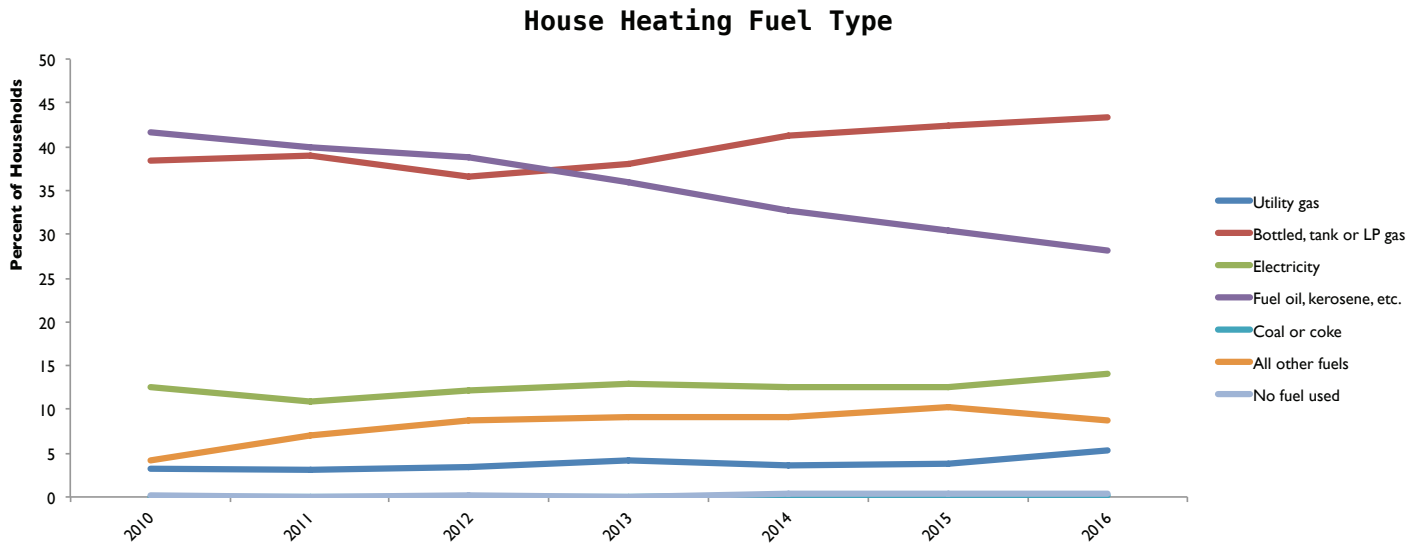
House heating fuel type: County, 2010–2016

U.S. Census Bureau, American Community Survey 5-Year Estimates

The number of Vineyard households heating their homes with fuel oil dropped 13.5 percent, with more households using gas and other fuels, or no fuel at all. The largest growth between 2010 and 2016 was in households using bottled, tank or liquefied petroleum gas (five percent more), followed by those using "all other fuels" (4.7 percent more) and those using utility gas from underground pipes (two percent more).

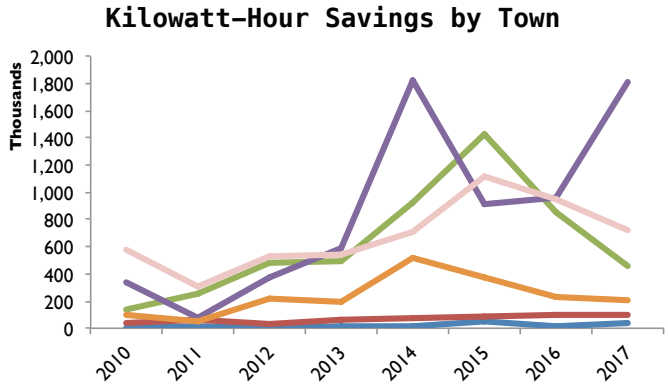
	2010	2011	2012	2013	2014	2015	2016
Utility gas[3]	3.3	3.1	3.5	4.1	3.6	3.8	5.3
Bottled, tank or liquefied petroleum gas	38.4	39	36.6	38	41.3	42.4	43.4
Electricity	12.5	10.9	12.2	12.9	12.6	12.5	14
Fuel oil, kerosene, etc.	41.6	40	38.9	35.9	32.7	30.5	28.1
Coal or coke	0	0	0	0	0.1	0.1	0.1
All other fuels	4.1	7	8.7	9.1	9.2	10.3	8.8
No fuel used	0.1	0	0.1	0	0.4	0.3	0.3

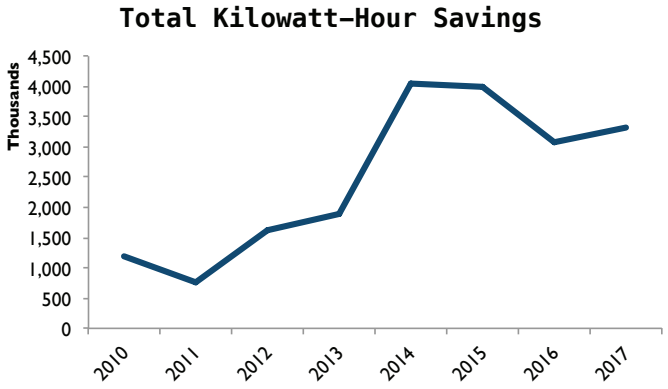
[3] Gas from underground pipes serving the neighborhood.

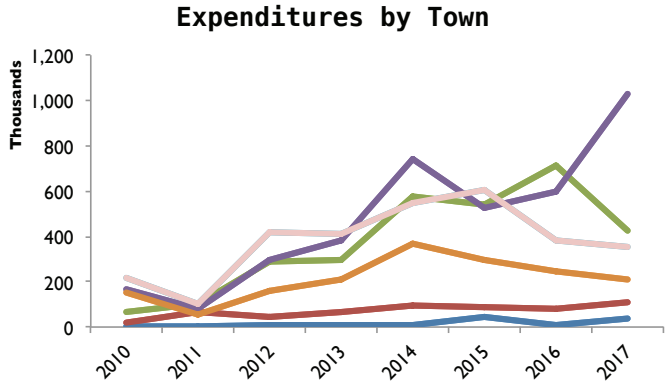


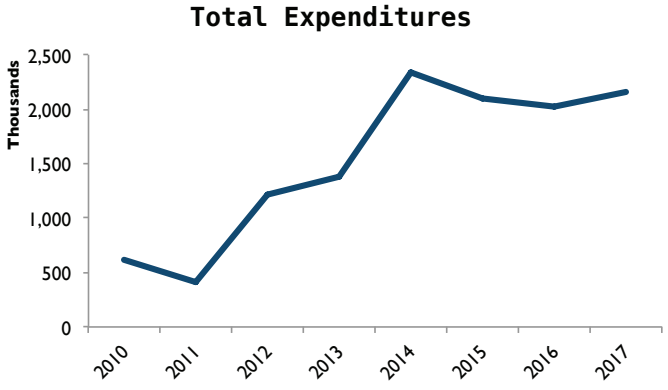
Cape Light Compact Energy Efficiency Program: Savings, expenditures and accounts by town, 2010–2017
Source: Cape Light Compact

Cape Light Compact (CLC) is an energy services organization that delivers energy efficiency programs and renewable electricity to towns in Barnstable and Dukes counties, including all six towns on the Island. It also conducts consumer advocacy. According to the organization, total kilowatt savings on the Vineyard as a result of its energy efficiency programs grew 182 percent between 2010 and 2017, while total expenditures by Island towns grew 247 percent.









Up-Island, CLC's residential home energy initiatives account for the largest portion of accounts, while down-Island, the group's residential lighting initiative caused participation to spike in 2016 and 2017, at least partly as a result of increased incentives and marketing. Unlike the residential home energy program, customers in the lighting program are counted mostly according to the number of energy efficient bulbs sold in stores, where about eight bulbs equal one participant. By that measure, the spike in participation down-Island likely corresponds to a greater number of stores that carry the bulbs.