

Attachment A: Tisbury MVP Workshop Participants
October 17, 2018

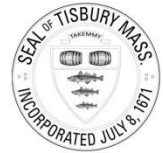
COUNT	FIRST NAME	LAST NAME	AFFILIATION
1	Brittany	Baron	Martha's Vineyard Hospital
2	Dawn	Bellante-Holand	Planning Board
3	Pam	Bennett	Human Resource
4	Malcolm	Boyd	Tisbury Board of Health
5	Suzanne	Cioffi	Martha's Vineyard Transit Authority
6	Christina	Colarusso	Tisbury Wastewater Planning Committee
7	John	Crocker	Harbormaster
8	Ann Marie	Cywinski	Red Cross
9	Cheryl	Doble	Planning Board
10	Greg	Endicott	Steamship Authority
11	Danielle	Ewart	Shellfish
12	John	Grande	Town Adminstration
13	Phil	Hale	Martha's Vineyard Shipyard
14	Patricia	Harris	Planning Board
15	Gerry	Hokanson	Tisbury Waterways
16	Tracey	Jones	Ambulatory Services
17	James	Lengyel	Martha's Vineyard Landbank Commission
18	Kirk	Metell	Facilities Manager
19	Elaine	Miller	Planning Board
20	Roger	Moffat	Tisbury Waterways and Harbor Management Committee
21	Greg	Monka	Island Elderly Housing
22	Adam	Moore	Sheriff's Meadow Foundation
23	Janet	Packer	Tisbury School Committee
24	Doug	Reece	Lagoon Pond Association
25	Ben	Robinson	Planning Board
26	Michael	Sawyer	Real Estate Development
27	John	Schilling	Fire Department
28	Christopher	Scott	Prime Marina Group
29	Joyce	Stiles-Tucker	Council On Aging
30	Bill	Straw	Energy Committee

COUNT	FIRST NAME	LAST NAME	AFFILIATION
31	Ray	Tattersall	Department of Public Works
32	Bernadette	Thomas	Martha's Vineyard Hospital
33	Maura	Valley	Board of Health
34	Jane	Varkonda	Conservation Agent
35	David	Vigneault	Dukes County Housing Authority
36	Phil	Wallis	Martha's Vineyard Museum

Attachment B: Workshop Handouts

- Workshop Agenda
- Tisbury MVP Workshop Overview Presentation Handout
- Climate Change Projections
- Selected Demographic Data
- Example Vulnerabilities and Strengths
- Key Recommendations from the 2015 Hazard Mitigation Plan

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**Tisbury Municipal Vulnerability Preparedness (MVP) Workshop Agenda**

Wednesday, October 17, 2018

St. Augustine's Church · 56 Franklin Street · Vineyard Haven

TIME	ACTIVITIES
8:30 AM	Arrival and Refreshments
9:00 AM	Welcoming Remarks <ul style="list-style-type: none">Jay Grande, Town Administrator
9:10 AM	Introductions and Overview of the Workshop <ul style="list-style-type: none">Will Keefer, Horsley Witten Group
9:20 AM	Overview Presentation on Science, Past Planning Efforts and Outcomes, and Data Resources Review recent climate related events. Present summary of anticipated climate changes. Present summary of recent/existing planning efforts
9:45 AM	Discussion #1: Large Group Identify top 4 Climate Change Hazards facing Tisbury
10:00 AM	15 Minute Break
10:15 AM	Discussion #2: Small Group Identify Features that are Vulnerabilities and Strengths
11:30 AM	2 Hour Midday Break
1:30 PM	Discussion #3: Small Group Identify Actions to address Vulnerabilities or protect Strengths. Discuss timeframe, responsibility, funding, as time allows. Prioritize top 5-6 Actions
3:00 PM	15 Minute Break
3:15 PM	Discussion #4: Small Groups Report Out Each group reports out top 5-6 Priority Actions
3:45 PM	Final Discussion: Large Group Select top 5-6 Priority Actions for Municipal Climate Resilience Discuss timeframe, responsibility, funding
4:15 PM	Wrap Up and Closing Remarks <ul style="list-style-type: none">Jay Grande, Town AdministratorWill Keefer, Horsley Witten Group
4:30 PM	Adjourn

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Municipal Vulnerability Preparedness Program Workshop

Will Keefer, MVP Certified
Senior Environmental Planner

Horsley Witten Group
October 17, 2018



Tisbury Core Planning Team

Name	Representing
Roger Moffat	Tisbury Waterways and Harbor Planning Committee
Cheryl Doble	Chair of Planning Board
Patricia Harris	Assistant to the Planning Board
Doug Reece	Tisbury Wastewater Planning Committee/ Lagoon Pond Association
Christina Colarusso	Tisbury Wastewater Planning Committee / DPW Advisory Board
Jay Grande	Town Administrator
John Schilling	Fire Chief
Gerard Hokanson	Tisbury Waterways Inc.
Alexandra Kral	Executive Assistant to the Town Administrator & Board of Selectmen
Pam Bennett	Administrative Assistant to the Town Administrator & Board of Selectmen
Will Keefer	Horsley Witten Group (HW)

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Horsley Witten Group Colleagues

Carl Simons, Senior Emergency Response Manager

Tara Nye-Lewis, Senior Planner

Brian Laverriere, Landscape Designer

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Handouts – handy reference info

- Agenda
- Overview Presentation Slides
- Climate Change Projections Data (Temp, Precipitation, Sea Level Rise)
- Examples of Vulnerabilities and Strengths
- Selected Demographic Data about Tisbury
- Prior Recommendations from the Dukes County Hazard Mitigation Plan
- Maps

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Vulnerability, Resilience & Adaptation

- Vulnerability:** the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes
- Resilience:** the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions
- Adaptation:** the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities.

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Source: IPCC Definitions

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Purpose of today's workshop

Draw upon YOUR knowledge.....



What are the
MOST IMPORTANT THINGS
that Tisbury should be doing
to reduce vulnerability and increase resilience?

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Governor Baker's Executive Order 569 & Recent Climate Change Legislation

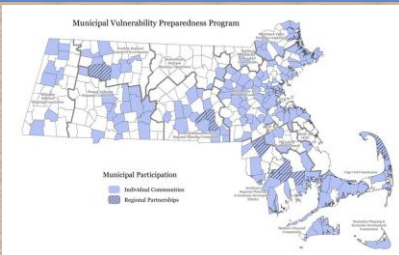
- September 2016, directed the state to assist municipalities to reduce vulnerability and improve resilience to climate change
- March 15, 2018: *An Act Promoting Climate Change Adaptation, Environmental and Natural Resource Protection and Investment in Recreational Assets and Opportunity*
 - \$1.4B to climate change preparedness, environmental protection and community investments



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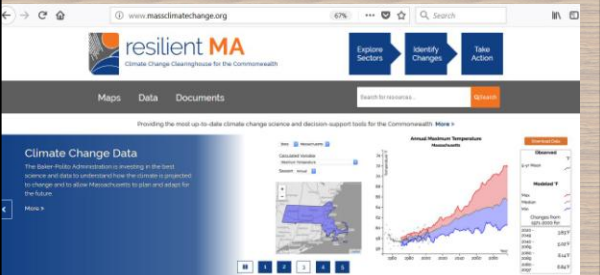
MVP Grantees



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www.massclimatechange.org



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Massachusetts State Hazard Mitigation and Climate Adaptation Plan

Completed in September 2018

Available at: <https://www.mass.gov/service-details/massachusetts-integrated-state-hazard-mitigation-and-climate-adaptation-plan>

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The Plan for Today – vibrant discussion

- Presentation to **set the stage** for our discussion
- Determine which **climate change hazards** to focus on
- Identify the most **vulnerable features** in Tisbury
- Identify the **features that provide strength**
- Develop **actions** – what can the Town do to address vulnerabilities and protect/enhance strengths?
- Prioritize the **most important actions** for Tisbury

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SO, who's in the room today? Who....

- Has had a conversation in the past week about weird weather?
- Has had to respond to a weather-related emergency on the job?
At home?
- Has ever been diverted on their way to work/home by flooded roads?
- Is employed by the Town of Tisbury?
- Volunteers your time on a Town board or committee?
- Participated in the development of the Dukes County Hazard Mitigation Plan?

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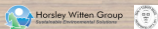
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Resilience & Adaptation

Goal for the Day

To identify the 5-6 Highest Priority actions
that the Town of Tisbury should take
to increase *resilience* and *adapt* to climate change

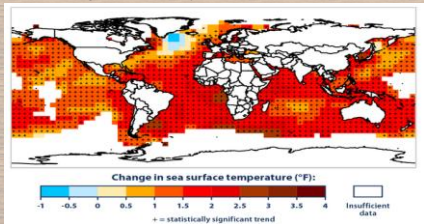
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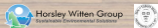
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Climate Change - Global

Change in Sea Surface Temperatures 1901 to 2015



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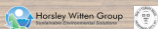
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Climate Change - Global

Increased Storm Intensity and Frequency

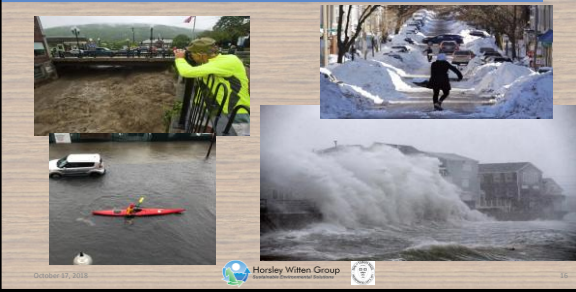


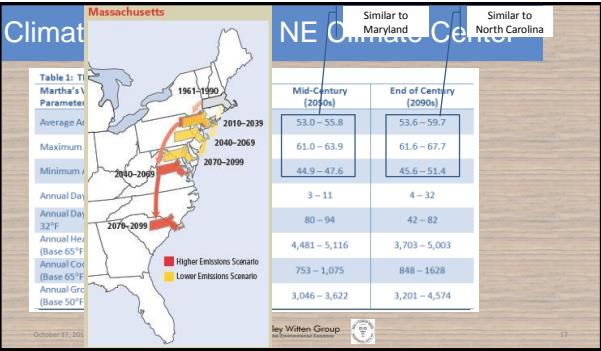
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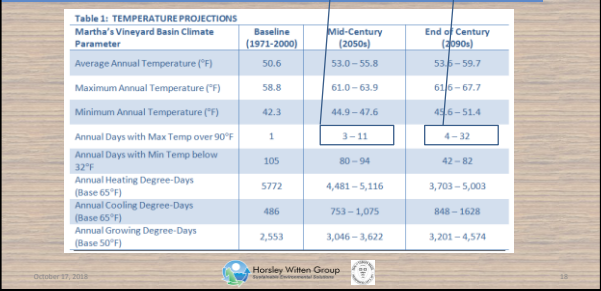
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Climate Change – New England





Climate Projections



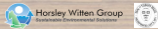
Climate Projections

Table 1: TEMPERATURE PROJECTIONS			
Martha's Vineyard Basin Climate Parameter	Baseline (1971-2000)	Mid-Century (2050s)	End of Century (2090s)
Average Annual Temperature (°F)	50.6	53.0 – 55.8	53.6 – 59.7
Maximum Annual Temperature (°F)	58.8	61.0 – 63.9	61.6 – 67.7
Minimum Annual Temperature (°F)	42.3	44.9 – 47.6	45.6 – 51.4
Annual Days with Max Temp over 90°F	1	3 – 11	4 – 32
Annual Days with Min Temp below 32°F	105	80 – 94	42 – 82
Annual Heating Degree-Days (Base 65°F)	5772	4,481 – 5,116	3,703 – 5,003
Annual Cooling Degree-Days (Base 65°F)	486	753 – 1,075	848 – 1628
Annual Growing Degree-Days (Base 50°F)	2,553	3,046 – 3,622	3,201 – 4,574

10-25% fewer freezing days

30-60% fewer freezing days

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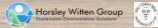
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Less energy required for indoor heating

More energy required for cooling

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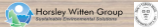
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Growing season almost doubles by end of century

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Climate Projections

Martha's Vineyard Basin Climate Parameter	Baseline (1971-2000)	Mid-Century (2050s)	End of Century (2090s)
Total Precipitation (inches):			
Annual	46.0	45.0 – 49.8	45.3 – 50.9
Winter	36.9	11.5 – 13.5	11.7 – 14.7
Spring	11.1	11.6 – 13.9	11.9 – 14.3
Summer	10.4	9.3 – 11.9	8.5 – 12.0
Fall	11.7	10.5 – 12.6	9.8 – 12.9
Annual Days with Precipitation over 1 inch	7	8 – 11	8 – 11
Annual Days with Precipitation Over 2 inches	1	1 – 2	1 – 2
Annual Days with Precipitation Over 4 inches	<1	<1	<1
Annual Consecutive Dry Days	18	18 – 20	17 – 22

Greater # of significant rain events and longer dry periods

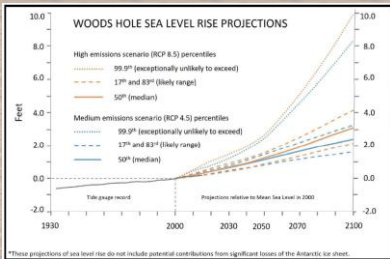
Largest increase is expected in winter

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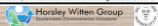


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Climate Projections



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Demographics

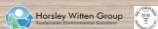
Demographic Parameter	Result
Population	3,949 people
Age	0-19 = 20%, 20-34 = 25%, 35-64 = 41%, 65+ = 14%
Income	<\$40K = 42%, \$40-60K = 38%, \$60K+ = 40%
% Below Poverty Line	10%
Race	White = 87%, Black = 7%, Asian = 1%, Other = 5%
Ethnicity	Hispanic = 6%, Not Hispanic = 100%
Percent of Population over 65 Living Alone	4.8
Environmental Justice	17.6%
Heart Attack Hospitalizations	48.8 (age-adjusted rate per 10,000 people)
Asthma Emergency Department Visits	128.8 (age-adjusted rate per 10,000 people)
Pediatric Asthma Prevalence	12.9% of all children enrolled in grades K-8
Heat Stress Emergency Department Visits	6.0 (age-adjusted rate per 10,000 people)

Significantly lower than statewide

Significantly higher than statewide

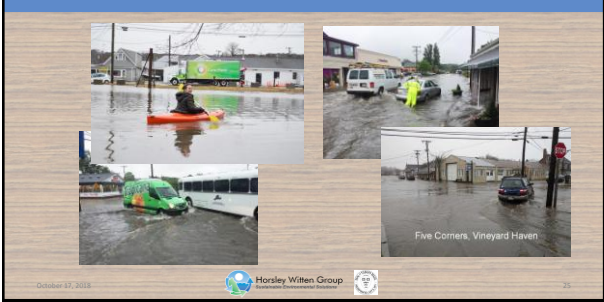
Similar to statewide

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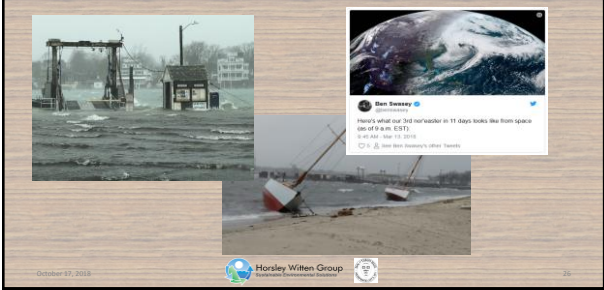


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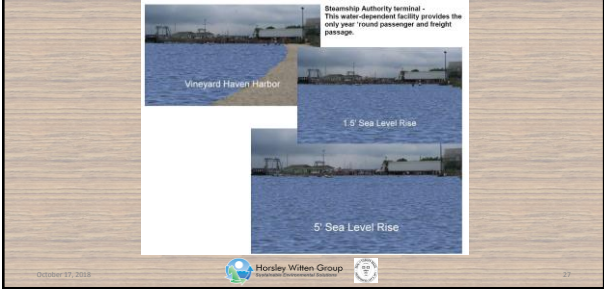
Local Impacts of Climate Change – INTENSE RAIN



Local Impacts of Climate Change – WINTER STORMS



Local Impacts of Climate Change – SEA LEVEL RISE



Health Impacts of Climate Change

Source: US Global Change Research Program, 2010.
https://mailtrading.gha.state.ms.us/Climate-Change/Climate_and_health_profile.html

Extreme Heat	Rising temperatures will lead to an increase in heat-related deaths and illnesses
Outdoor Air Quality	Rising temperatures and wildfires and decreasing precipitation will lead to increases in ozone and particulate matter, elevating the risks of cardiovascular and respiratory illnesses and death.
Flooding	Increased coastal and inland flooding exposes populations to a range of negative health impacts before, during, and after events
Vector-Borne Infection (Lyme Disease)	Ticks will show earlier seasonal activity and a generally northward range expansion, increasing risk of human exposure to Lyme and disease-causing bacteria.
Water-Related Infection (Vibrio vulnificus)	Increases in water temperatures will alter timing and location of Vibrio vulnificus growth, increasing exposure and risk of water-borne illness.
Food-Related Infection (Salmonella)	Rising temperatures increase Salmonella prevalence in food, longer seasons and warming waters increase risk of exposure and infection.
Mental Health and Well-Being	Changes in exposure to climate- or weather-related disasters cause or exacerbate stress and mental health consequences, with greater risk for certain populations.

Hazards Exacerbated by Climate Change

Intense Rain/Flooding	Heat Waves/Extreme Heat
Wind Events	Fire
Hurricanes or Nor’easters	Drought
Winter Storms (Snow/Wind/Cold)	Coastal Flooding/Storm Surge
Extreme Cold	Sea Level Rise

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Vulnerabilities to the Hazards – a few examples

INFRASTRUCTURE	Main road floods during storms, blocking emergency response. Power outages during heat waves lead to health concerns. Wildfire and high winds resulting in supply chain interruptions. Sewer pump stations become submerged and inoperable.
SOCIETAL	Senior housing without backup generators during heat waves. Residents without access to transportation during hurricane evacuation. Household contamination and sewage mobilization during flooding. Limited areas of refuge in elementary schools during severe weather.
ENVIRONMENTAL	Beachfront development reducing protection provided by dunes. Proliferation of subdivisions in wildfire and flood prone areas. Lack of urban tree canopy increasing heat island effect.

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