



2023 State Hazard Mitigation Plan & Heat Vulnerability

Agenda

State Hazard Mitigation Plan Overview



2023 Hazard Assessment



Overview of Heat in Vermont



Heat Adaptation Strategies



Integrating Heat into Local Hazard Mitigation Plans

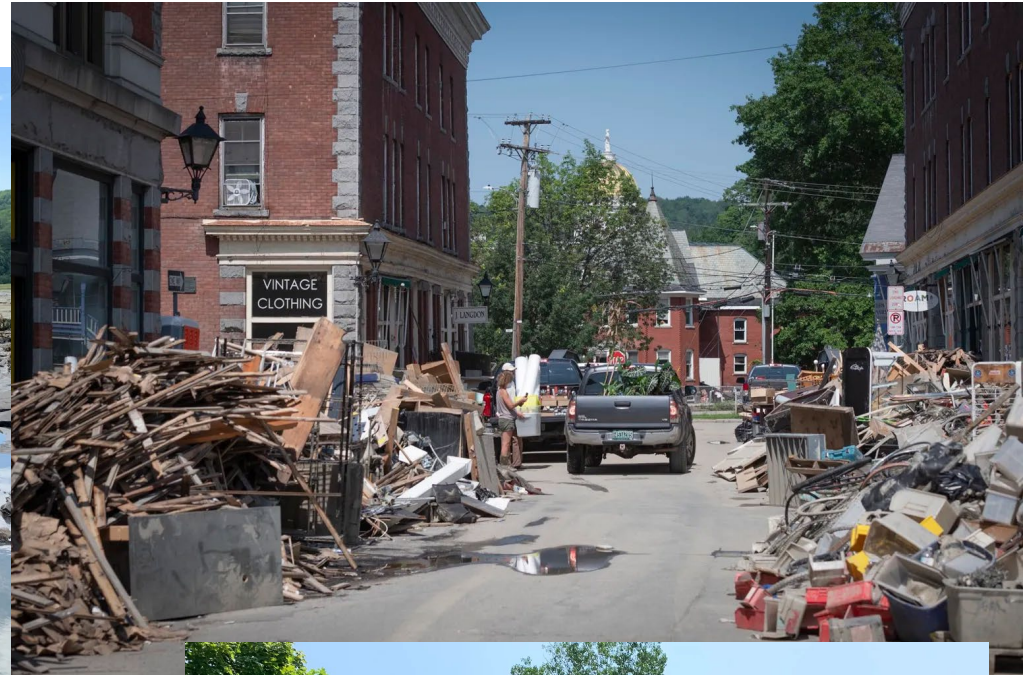
What is the SHMP?

- State Hazard Mitigation Plan (SHMP)
- Identifies natural hazards that affect Vermont
- Includes an assessment of potential impacts of natural hazards on people, buildings and infrastructure, environment, and the economy.
- Provides a roadmap for improving long-term resilience through hazard mitigation/adaptation strategies by State agencies and partners.
- Needs an update and FEMA-approval every five years.

<https://vem.vermont.gov/plans/SHMP>



Why update the SHMP?



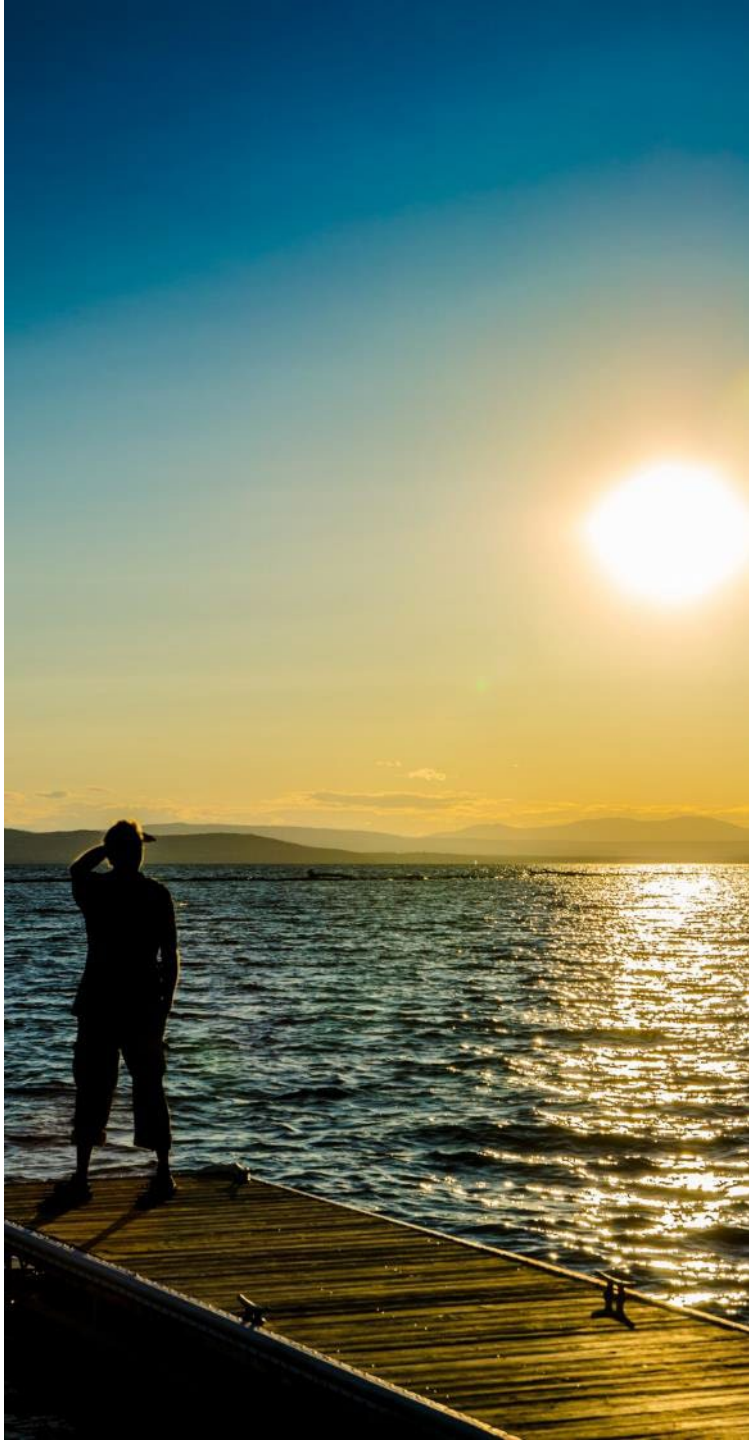
Hazard Assessment

- A task group of subject matter experts met to discuss probability and impact of each hazard.
- Ranked natural hazards based on probability and potential impact.
- The biggest change was in the ranking of heat, which moved to the third position after fluvial erosion and inundation flooding.
- Heat has always been a hazard, and climate change is making it worse.

Table 3: Hazard Assessment

Hazard Impacts	Probability	Potential Impact					Score*:
		Built Environment	People	Economy	Natural Environment	Average:	
Fluvial Erosion	4	4	4	4	4	4	16
Inundation Flooding	4	4	4	4	2	3.5	14
Heat	4	2	4	3	2	2.75	11
Wind	4	3	2	2	2	2.25	9
Snow	4	2	3	2	1	2	8
Ice	3	2	3	3	2	2.5	7.5
Drought	3	1	3	3	3	2.5	7.5
Infectious Disease Outbreak	3	1	4	4	1	2.5	7.5
Cold	3	2	3	2	2	2.25	6.75
Invasive Species	3	2	1	3	3	2.25	6.75
Landslides	3	3	2	1	2	2	6
Wildfire	2	3	3	3	3	3	6
Earthquake	2	2	2	2	2	2	4
Hail	3	1	1	2	1	1.25	3.75

*Score = Probability x Average Potential Impact



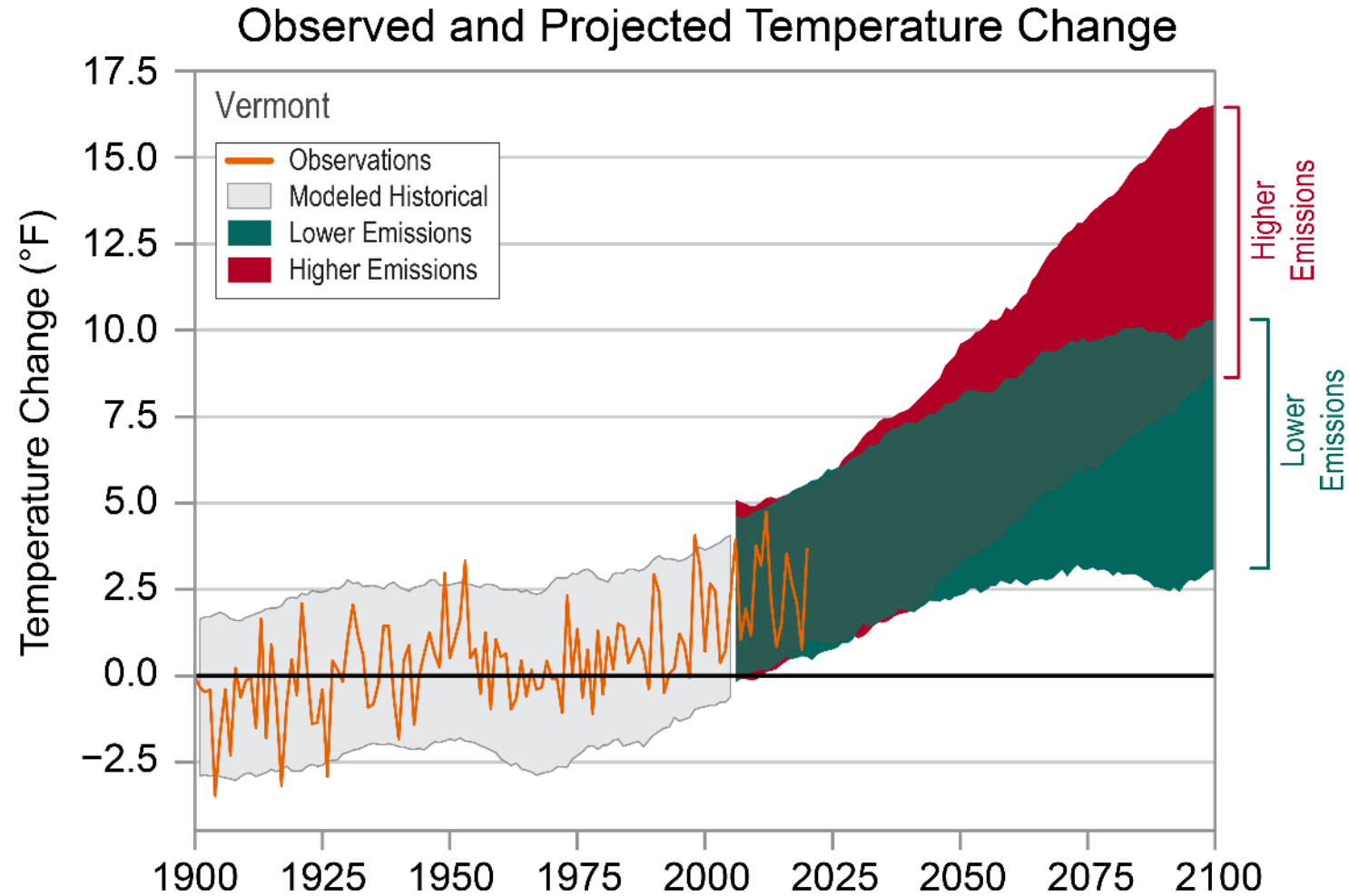
Heat Vulnerability in Vermont

Jared Ulmer

Climate & Health Program Manager

September 21, 2023

The frequency and intensity of hot weather is increasing



Vermont is experiencing hotter days and nights

Indicator	Observed weather at Burlington Airport		Climate projections for Chittenden County		
	1950-2009	2010-2022	2015-2044	2035-2064	2070-2099
Days with max temperature above 95°F	0.8	2.0	1.6 - 2.0	3 - 6	6 - 20
Days with max temperature above 90°F	4	9	9 - 10	13 - 19	19 - 44
Days with min temperature above 70°F	2	7	-	-	-

Data sources

Historic observations: <https://www.ncdc.noaa.gov/cdo-web/search>

Climate projections: <https://livingatlas.arcgis.com/assessment-tool/explore/details>

Heat-related health impacts in Vermont

	May	June	July	August	September
Average daily high heat index (°F), Burlington Airport	68°	75°	83°	81°	72°
Heat-related ED visits, statewide total, per month (2009-2019)	14	19	47	17	7

Max heat index (°F), Burlington Airport	Days per year*	Heat-related ED visits, per day*	Heat-related deaths, total*	All ED visits, per day*	All deaths, per day*
Less than 80°	97	0.2	2	742	12.9
80° - 89°	46	1	2	778	13.3
90° - 94°	6	3	2	789	14.1
95° or hotter	3	7	6	795	14.2

* Heat-related data are reported for May-September, 2009-2019. ED visits and deaths are statewide totals.

Vermont-specific vulnerabilities

1. Limited opportunities for our bodies to acclimate to hot weather
2. Lack of experience with adjusting behaviors for hot weather
3. Many homes, schools, and other buildings are not adequately weatherized and/or do not have air conditioning
4. We have limited plans, policies, and programs to address hot weather
5. Large populations of individuals disproportionately impacted by heat (older adults living alone, people that are unhoused)

Some people are at especially high risk during hot weather

More exposure to hot conditions

- Outdoor workers and hobbyists
- Unhoused
- Urban residents

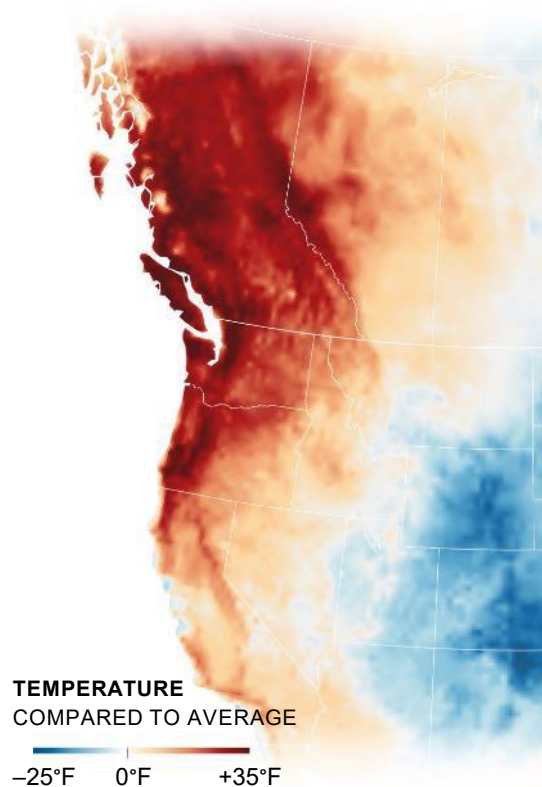
Particularly sensitive to heat exposure

- Anyone not acclimated to hot weather
- Older adults and young children
- Pregnant
- Overweight or chronic medical condition
- Using drugs, alcohol, some prescription meds

Limited adaptation resources

- Live alone
- Unable to access community cooling sites
- Unable to keep their home cool

2021 “Heat Dome” in Northwestern USA & Western Canada



SOURCE: GODDARD EARTH OBSERVING SYSTEM MODEL, NASA, JUNE 27, 2021.

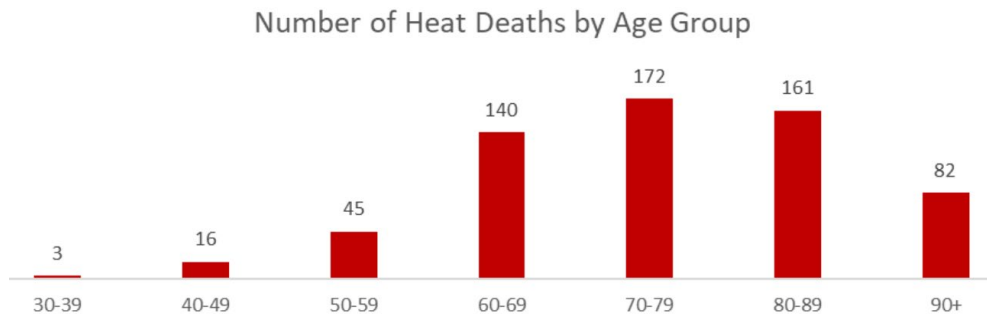
City	Average high (May-June)	Average low (May-June)	Record high (before Heat Dome)
Seattle, WA	65	48	103
Portland, OR	68	49	107
Victoria, BC	64	46	98
Burlington, VT	67	46	101

City	June 26, 2021	June 27, 2021	June 28, 2021
Seattle, WA	102	104	108
Portland, OR	108	112	116
Victoria, BC	96	99	103

Well over 1,000 people died as a result of the Heat Dome event

	Excess deaths
Washington	450
Oregon	160
British Columbia	600
Vermont equivalent	45

Deaths in British Columbia:



98% of deaths occurred inside a residence
56% of decedents lived alone
10% had A/C in residence, **2%** had A/C on

June-July 2018 heat wave impacts

LOCAL

Vt. heat wave: Essex Junction woman died in home where temperature reached 115 degrees

Elizabeth Murray and Will DiGravio Burlington Free Press

Published 4:16 p.m. ET July 6, 2018 | Updated 5:32 p.m. ET July 10, 2018

[View Comments](#)



Vermont's death toll from last week's extreme heat wave has risen to four, state Department of Health Spokesman Ben Truman said Monday.

Among the deceased is [REDACTED] who died in a home where the temperature had risen to 115 degrees.

Heat preparedness and response strategies to consider

Raise awareness	<ul style="list-style-type: none">• Alert the community about heat warnings, safety tips, resources.
Identify & activate cooling facilities	<ul style="list-style-type: none">• Open or extend hours at public buildings with air conditioning.• Support access to cooling facilities, pools, beaches, etc.
Develop and mobilize support networks	<ul style="list-style-type: none">• Work with community partners and volunteers to conduct wellness checks and assist people at highest risk.
Ensure safety for outdoor activities	<ul style="list-style-type: none">• Ensure access to water, shade, indoor cooling, and medical attention. Be prepared to modify or cancel activities.
Mobilize emergency response personnel	<ul style="list-style-type: none">• Emergency medical personnel may be needed for event support, wellness checks, cooling center staffing, or surge capacity.

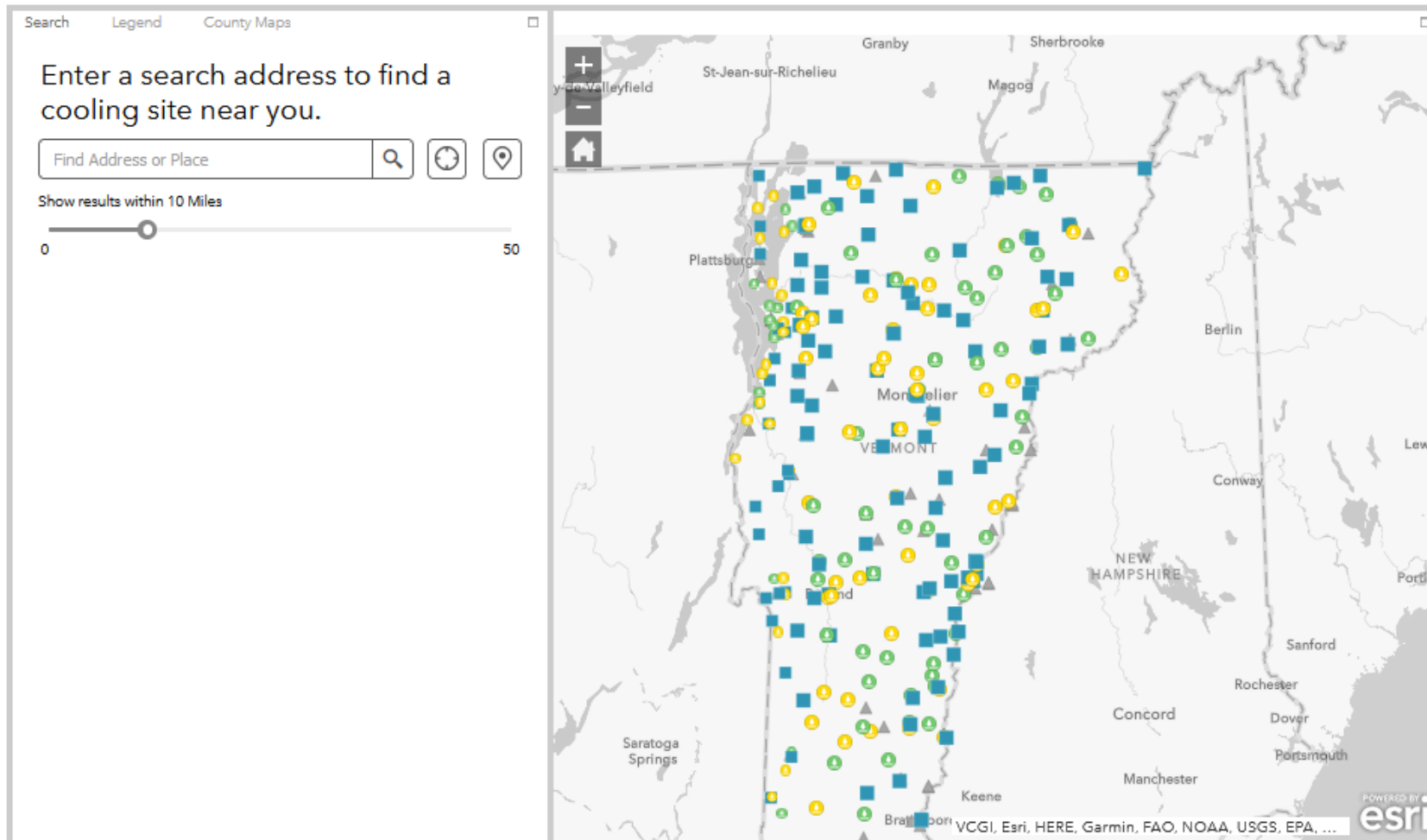
Find Somewhere to Cool off This Summer

Use the map below to find somewhere to take a break in air conditioning or splash in cool water. Please call the site before you go to confirm it is open and if there are entry fees. If you're going to a lake or pond, be sure to [look for cyanobacteria blooms](#) before going in the water. If you need more help finding or getting to a cooling site, please call 2-1-1. Swimming holes are typically not displayed on this map, but they may provide a safe option when following these [safety tips](#).

Are you aware of cooling sites that are not on the map? Please let us know →

We'd like to hear from you! Let us know if this map is helpful or if you'd like to share your impressions about cooling sites.

Give us your feedback →



Other long-term adaption strategies to consider

Address heat in local plans	<ul style="list-style-type: none">• Local Hazard Mitigation Plan• Local Emergency Management Plan• Encourage local schools, businesses, organizations to develop heat plans
Modify buildings for heat resilience	<ul style="list-style-type: none">• Building weatherization• Install cooling equipment (and backup power!)• Install window shades, plant shade trees, replace incandescent bulbs
Reduce urban heat impacts	<ul style="list-style-type: none">• Maintain and increase tree canopy and vegetative cover• Reduce pavement and other impervious surfaces• Require/encourage heat-resilient land use and construction

Hot weather emergency planning template (example)

Overall responsibility / incident manager

	Incident Manager	Deputy Incident Manager
Name	Sally	Matt
Title	Emergency Management Director	Emergency Management Coordinator
Primary contact info	802-123-4567	802-987-6543
Secondary contact info	emd@town.gov	emc@town.gov

Overview of actions, triggers, and responsibilities

Action	Trigger*	Responsibility
Public outreach (seasonal awareness)	First forecasted heat index of 90°F+ each year	Deputy Incident Manager
Public outreach (advisory)	Heat Advisory	Deputy Incident Manager
Activate most cooling facilities	Heat Advisory	Incident Manager
Mobilize support networks	Heat Advisory	Deputy Incident Manager, Fire Chief, Senior Center Director
Consider activity modifications	Heat Advisory	Incident Manager
Coordinate with utilities	Heat Advisory	Deputy Incident Manager
Mobilize emergency personnel	Heat Warning	Deputy Incident Manager, Fire Chief
Activity modifications	Heat Warning	Incident Manager
Activate cooling shelter	Heat Warning for 2 or more consecutive days	Incident Manager

*Triggers are meant to be advisory. Actions and triggers should be modified based on the expected or actual severity of each hot weather event.

Resources and tools for addressing heat risks

Heat safety tips and community cooling sites map:

<http://www.healthvermont.gov/climate/heat>

Local hot weather preparedness guidance and template:

<https://www.healthvermont.gov/sites/default/files/documents/pdf/ENV-CH-hot-weather-planning-guidance.pdf>

Hot weather outreach toolkit:

<http://www.healthvermont.gov/file/env-ch-hot-weather-media-toolkitdocx>



Thank you!

Let's stay in touch.

Email: ClimateHealth@vermont.gov

Web: www.healthvermont.gov

Social: [@healthvermont](https://twitter.com/healthvermont)

Mitigation Strategy

- Within each Local Hazard Mitigation Plan you will find the mitigation strategy, or list of actions that the jurisdiction will take to mitigate or adapt to a hazard.
- If Heat is a prioritized hazard profiled in your plan, there needs to be at least one action addressing heat.
- So what can they be? ...

MULTI-JURISDICTION HAZARD MITIGATION PLAN UPDATE

Towns of Burke, Sheffield, Sutton and Wheelock, Vermont

DECEMBER 2020

Protect life, property, natural resources and the quality of life in the Towns of Burke, Sheffield, Sutton and Wheelock by reducing their vulnerability to climate change and natural hazards.



Planning for Rural Communities

- A lot of the heat planning resources are geared towards urban environments.
- The Urban Heat Island Effect is a huge issue, but we experience heat in rural Vermont too.



Co-Benefits and Mitigation Actions

- What do you already have available to you?
- How can actions address multiple hazards?
- How can you get people to use available resources?



Other Heat Mitigation Actions

Planning, Regulations and Structural Projects

- Require shade for parking lots and rights-of-way
- Land use and building code for energy efficient buildings
- Assess infrastructure vulnerable to heat related failure
- Require landlords keep buildings a safe temperature
- Work with utilities to plan for brown outs when every AC is on
- Identify cooling / resilience centers that people will use
- Require schools have AC or heat pumps
- Further assess / address the community vulnerability to heat



Other Heat Mitigation Actions

Education and Awareness

- Identify partners and build relationships to spread the word on avoiding heat related illness and death
- Keep track of those who may be most at-risk to heat and know who will check in on them
- Provide educational materials on heat risks in Vermont and make them available online and at community nodes – town hall, library, and schools
- Ensure farm workers have the resources needed to stay safe working outside in heat and staying cool at night

Other Heat Mitigation Actions

Natural Systems Protection

- Use trees for shade and reduce impervious surfaces with vegetation.
- Conserve natural areas that provide channels for cool air as communities potentially develop in the future.





**Wildlife
Habitat**

**Local Climate
Moderation/ Cooling**

**Air
Filtration**

**Carbon
Sequestration**

**Wind
Abatement**

**Beauty/ Sense
of Place**

**Real Estate
Value**

Mental Health

Shade

**Noise
Abatement**

**Erosion
Control**

Soil Health

**Stormwater
Retention**

**Water
Quality**



Discussion



Thank you for joining us!

You can reach Caroline Paske, VEM at caroline.paske@vermont.gov or Jared Ulmer, VDH at ClimateHealth@vermont.gov