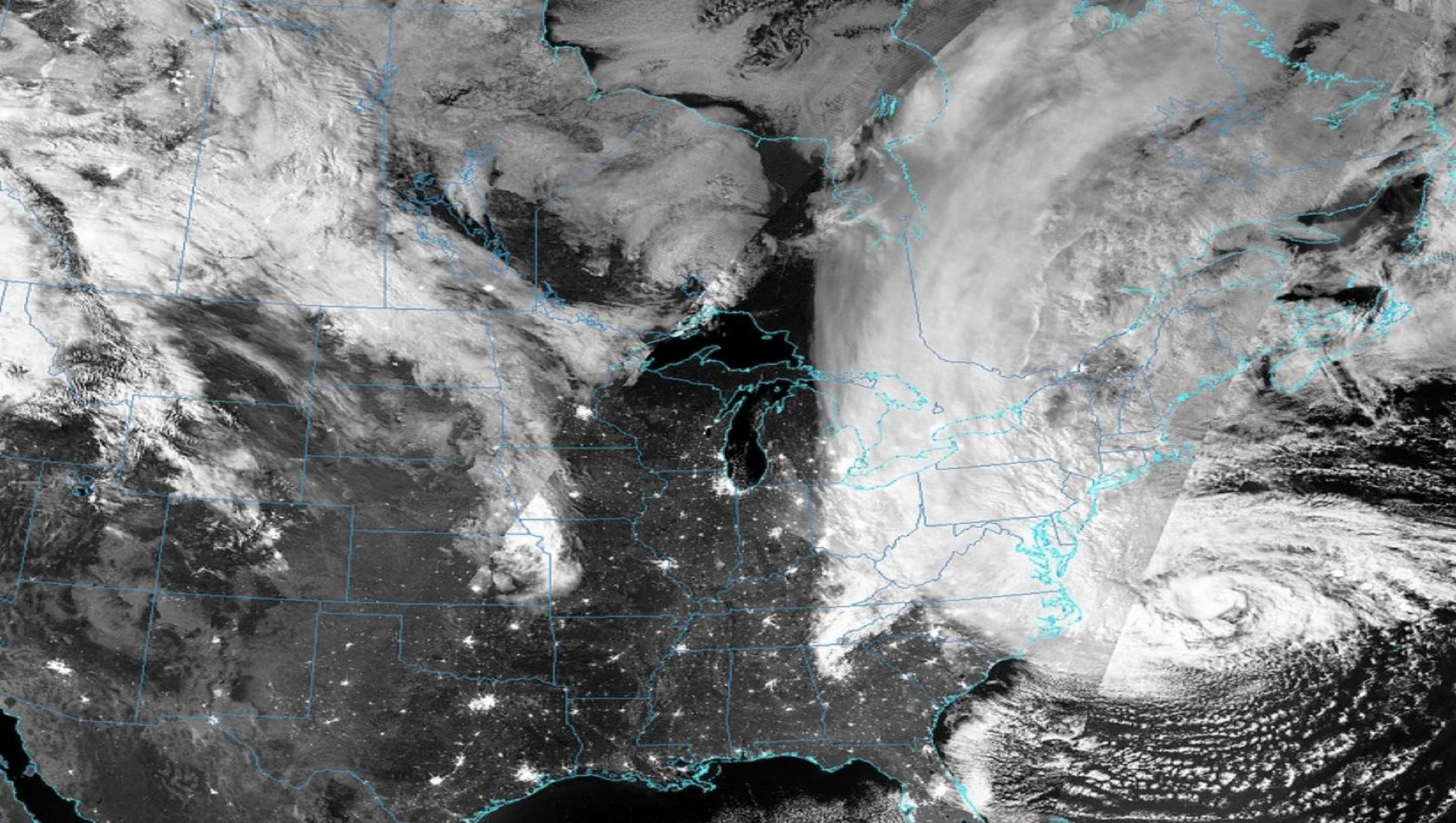


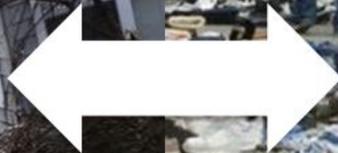
REBUILD BY DESIGN







PHYSICAL



SOCIAL

TYPICAL DESIGN PROCESS

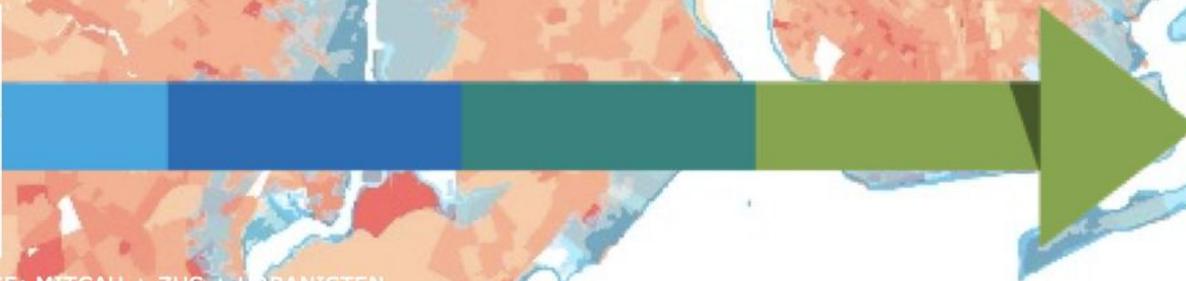
Site

Budget

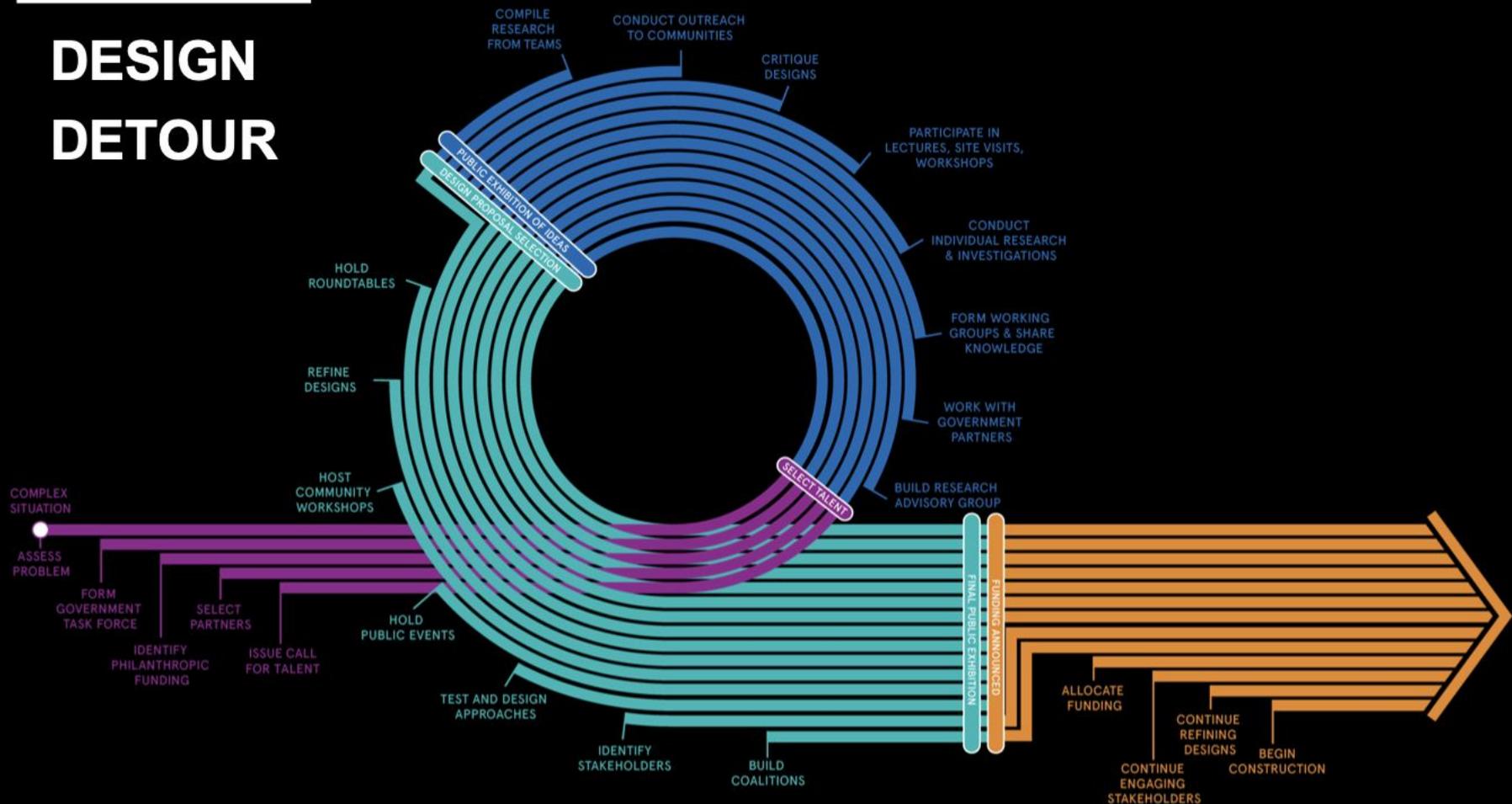
Program

Square Footage

Timeline



DESIGN DETOUR



REGIONAL PROJECTS: \$4.3 Billion Climate Infrastructure

NEW YORK CITY:

- **\$335M:** The BIG U in Manhattan, NY
- **\$20M:** Lifelines in Hunts Point, Bronx, NY

NEW JERSEY:

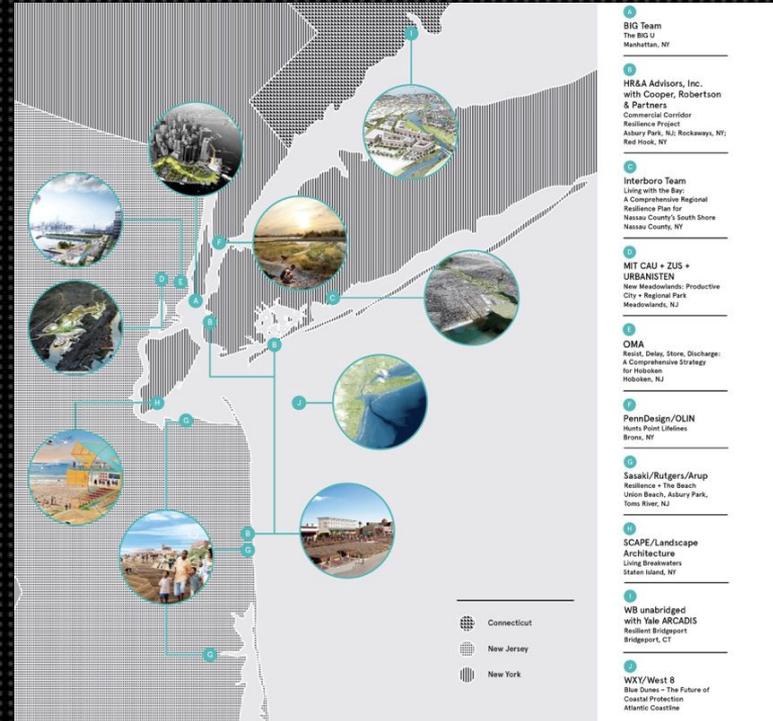
- **\$230M:** Resist, Delay, Store, Discharge in Hoboken, Weehawken, Jersey City, NJ
- **\$150M:** New Meadowlands in Little Ferry, Moonachie, Carlstadt, Teterboro, NJ

NEW YORK STATE:

- **\$125M** Living with the Bay in Nassau County, Long Island
- **\$60M:** Living Breakwaters in Tottenville, Staten Island, NY

CONNECTICUT

- **\$10M:** Resilient Bridgeport in Bridgeport, CT



PLACE-BASED ENGAGEMENTS THROUGHOUT THE WORLD

- **Athens:** Promoted stewardship for Lycabettus Hill
- **Atlanta, GA:** Developed a student design competition for Ted Turner Drive Resilience Corridor
- **Amman:** RBD_U program on waste, water, transportation
- **Boulder, CO:** Created a resilient and sustainable mobile home park, and later designing a collaborative process to address COVID needs
- **Boston, MA:** Proposed a citywide plan to create resilience districts
- **Juarez, MX:** Executed a design competition for Juan Gabriel Plaza
- **Los Angeles, CA:** Collaborated with stakeholders to create climate-forward building codes
- **Mexico City:** Developed a master plan framework for Xochimilco
- **Oakland, CA:** Implemented a workshop series on effective engagement
- **San Juan, PR:** Convened experts and the community for a master plan process
- **Singapore:** Promoted a community led plan to build social resilience to address flash floods



“Vermont’s a little
unique,”
Harrington said.
“We don’t deal
with major
disasters on a
regular basis.”

--Michael Harrington,
Commissioner
Department of Labor
September 6, 2023



Image By: Mike Dougherty/ VTDigger



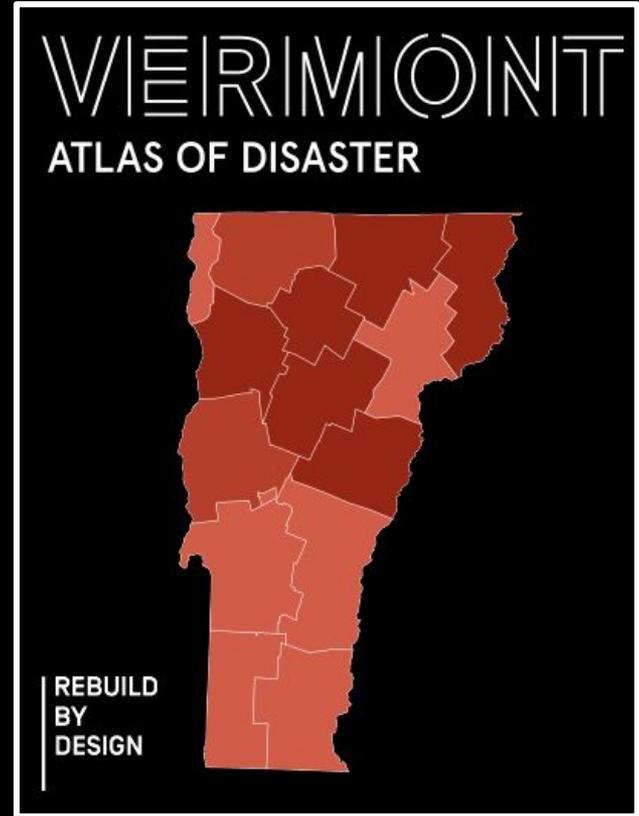
VERMONT



ATLAS OF DISASTER: VERMONT

KEY FINDINGS 2011-2021

- Experienced **17 federally declared major disasters** due to **extreme weather** between 2011-2021.
- **15** of those events were due to **tropical storms and flooding**.
- **Ranked 5th** in the country for **per capita post-disaster federal assistance**.
- **Ranked 7th** in the country for number of recent **disaster occurrences** (tied with Alabama, Texas, & West Virginia)
- **Every county has had 4 or more** recent major disasters, and **6 counties have had at least 10**.
- **Washington County** has had the **highest number of disaster declarations** in the state: **11** disasters.



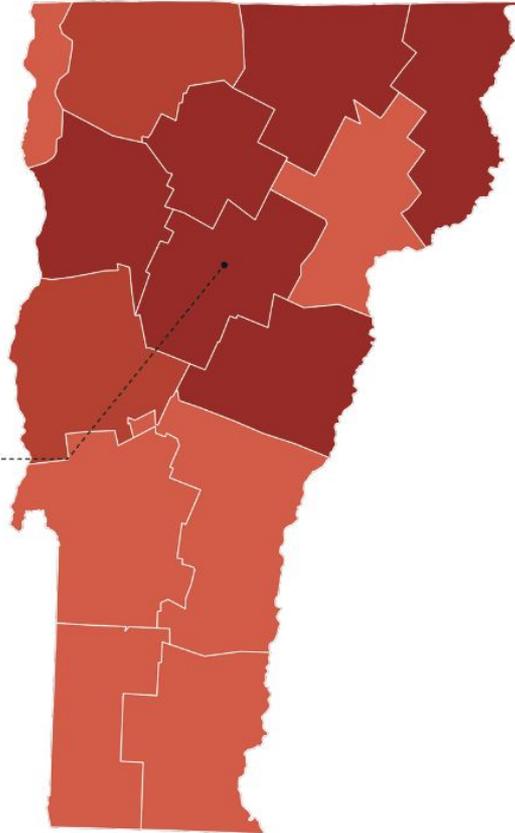
DISASTER OCCURRENCES 2011-2021

FEDERALLY DECLARED CLIMATE DISASTERS BY COUNTY

117
disaster
declarations

Every county in Vermont has had four or more recent climate disasters. Six out of the 14 counties have had 10 or more.

Washington County has experienced 11 recent disaster declarations - the highest in the State.



Number of Disaster Events

Major Disaster Declarations (2011-2021)

- 0 occurrences
- 1 occurrence
- 2-3 occurrences
- 4-6 occurrences
- 7-9 occurrences
- 10+ occurrences

FEDERAL ASSISTANCE 2011-2021

POST-DISASTER PUBLIC ASSISTANCE AND HAZARD MITIGATION FUNDS OBLIGATED BY COUNTY FOR CLIMATE DISASTERS

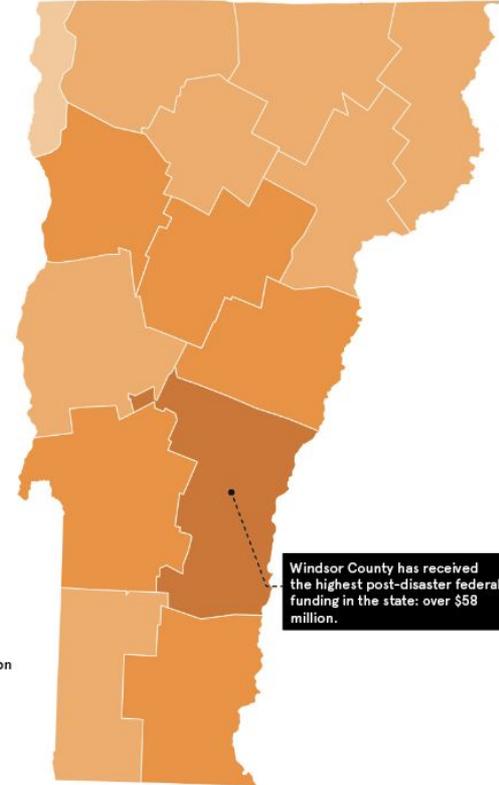
\$370M
post-disaster
assistance

\$331M FEMA obligations

\$39.5M HUD CDBG-DR Funds

\$370M FEMA + HUD assistance

\$593 per capita cost



Windsor County has received the highest post-disaster federal funding in the state: over \$58 million.

Public Assistance and Hazard Mitigation

Federal Share Obligated (2011-2021)

- \$0 to \$100K
- \$100K to \$1M
- \$1M to \$10M
- \$10M to \$50M
- \$50M to \$100M
- \$100M to \$1B
- \$1B to \$9B

VERMONT

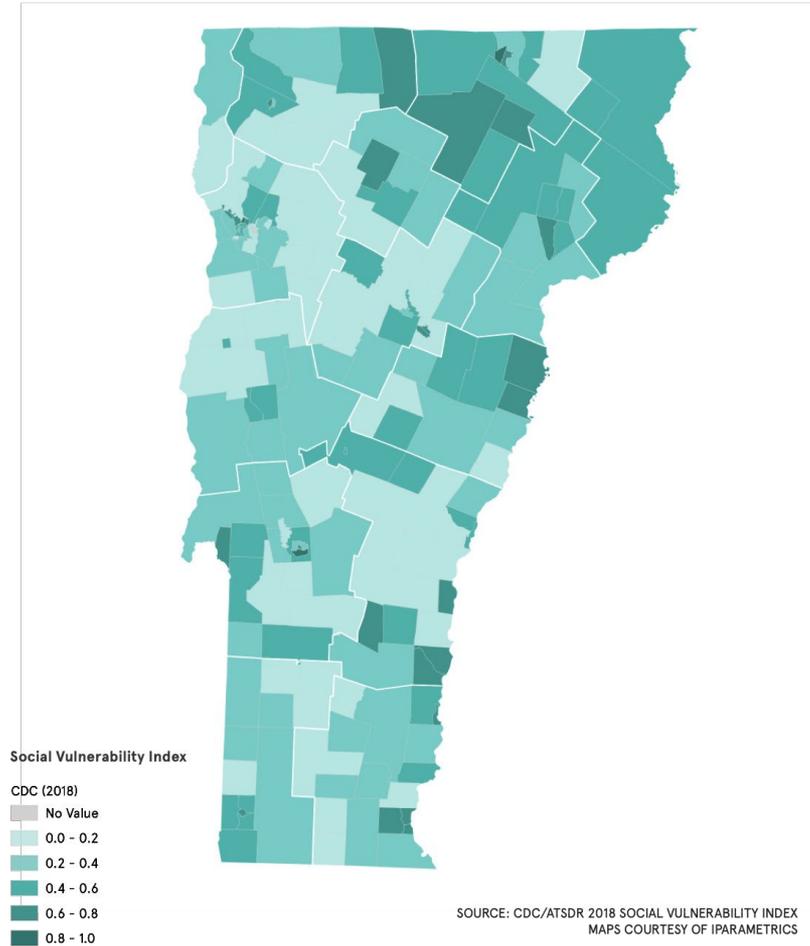
TOTAL: 17 DISASTERS FEMA PA - HM: \$331M FEMA - HUD ASSISTANCE: \$370 M		2011				2012				2013				2014				2015				2017				2018				2019				2020				2021			
County Name	# of Claims	1001: SEVERE STORMS AND FLOODING		4001: SEVERE STORMS AND FLOODING		4022: TROPICAL STORMS HUR		4041: SEVERE STORMS AND FLOODING		4085: SEVERE STORM, TORNADO, AND FLOODING		4123: SEVERE STORMS AND FLOODING		4140: SEVERE STORMS AND FLOODING		4160: SEVERE WINTER STORMS		4170: SEVERE STORMS AND FLOODING		4207: SEVERE WINTER STORM		4330: SEVERE STORM AND FLOODING		4330: SEVERE STORMS AND FLOODING		4336: SEVERE STORM AND FLOODING		4385: SEVERE STORM AND FLOODING		4445: SEVERE STORMS AND FLOODING		4574: SEVERE STORM AND FLOODING		4575: SEVERE STORM AND FLOODING							
		PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations						
Adams County	8	\$1,302,024	\$38,312	\$38,348		\$3,266,872	\$1,028,544																																		
Benning County	4	\$7,397,468				\$9,358,368	\$1,021,021																																		
Caledonia County	6	\$4,328,185			\$1,162,688	\$0		\$11,448																																	
Champlain County	10	\$11,376,416	\$2,400,000	\$228,772		\$403,897	\$1,342,584					\$1,400,000	\$0	\$1,258,214	\$0	\$88,577	\$0																								
Essex County	10	\$2,366,165	\$361,800	\$0	\$1,349,668	\$0	\$55,127	\$0																																	
Franklin County	8	\$4,405,814	\$36,882	\$0		\$300,874	\$50,284	\$820,020	\$0																																
Grand Isle County	5	\$542,264	\$62,094	\$0		\$0	\$0																																		
Lamoille County	10	\$4,914,222	\$396,294	\$28,446		\$1,282,312	\$1,230,204																																		
Orange County	10	\$11,125,668				\$5,790,765	\$5,461,545																																		
Orleans County	10	\$9,216,020	\$1,161,240	\$0		\$1,270,740	\$27,240																																		
Rutland County	5	\$22,161,838				\$12,161,807	\$18,908,818																																		
Washington County	11	\$23,086,400	\$404,827	\$0	\$4,164,000	\$91,871																																			
Windham County	4	\$32,448,982				\$39,880,817	\$3,919,209	\$108,280	\$0																																
Windsor County	8	\$42,177,242				\$42,228,218	\$7,363,649																																		
Total FEMA Allocation		\$320,582,286	\$15,706,804	\$922,116	\$10,648,790	\$111,209	\$286,216,271	\$30,244,704	\$446,567	\$216	\$1,217,781	\$491	\$1,814,983	\$140,805	\$61,102,873	\$85,216	\$8,342,341	\$65,034	\$1,824,025	\$123	\$3,940,000	\$111,222	\$1,406,161	\$7,540	\$11,616,696	\$940,465	\$5,128,896	\$76,404	\$3,246,797	\$47,700	\$9,172,172	\$21,135	\$10,571,185	\$18,800	\$141,820						

VERMONT

TOTAL: 17 DISASTERS FEMA PA + HM: \$331M HUD CDBG-DR: \$39.5 M FEMA + HUD ASSISTANCE: \$370 M			2011								
			1995: SEVERE STORMS AND FLOODING		4001: SEVERE STORMS AND FLOODING		4022: TROPICAL STORM IRENE		4043: SEVERE STORMS AND FLOODING		4066: SEVERE STORMS AND FLOODING
County Name	# of Climate Disasters 2011-2021	Total FEMA Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations	HM Obligations	PA Obligations
Statewide	17	\$127,173,118	\$6,777,749	\$11,338	\$674,418	\$19,715	\$93,255,030	\$4,573,057	\$20,995	\$316	\$2
Addison County	8	\$7,833,824	\$288,312	\$236,548			\$3,628,573	\$1,638,141			\$12
Bennington County	4	\$7,597,696					\$6,339,296	\$1,001,021			
Caledonia County	6	\$6,326,165			\$3,152,698	\$0	\$2,242,702	\$113,495			
Chittenden County	10	\$11,879,816	\$2,460,958	\$225,772			\$439,637	\$1,291,054			
Essex County	10	\$2,269,186	\$391,202	\$0	\$1,396,986	\$0	\$52,197	\$0			
Franklin County	8	\$4,400,614	\$290,862	\$0			\$300,874	\$592,394	\$600,020	\$0	
Grand Isle County	5	\$642,564	\$642,564	\$0			\$0	\$0			
Lamoille County	10	\$9,648,677	\$909,281	\$28,458			\$1,536,312	\$1,230,209			\$26
Orange County	10	\$11,123,688			\$167,667	\$0	\$5,790,765	\$549,046			
Orleans County	10	\$6,319,426	\$1,111,248	\$0			\$1,920,785	\$657,688			\$60
Rutland County	5	\$20,115,836					\$12,181,097	\$3,619,559			
Washington County	11	\$23,598,405	\$836,627	\$0	\$5,154,030	\$91,571	\$9,115,274	\$3,735,881	\$220,072	\$0	
Windham County	4	\$33,446,662					\$28,690,917	\$3,501,209	\$105,280	\$0	
Windsor County	5	\$58,177,312					\$43,722,813	\$7,781,951			
Total FEMA Allocation		\$330,552,989	\$13,708,804	\$502,116	\$10,545,799	\$111,286	\$209,216,271	\$30,284,704	\$946,367	\$316	\$1,01

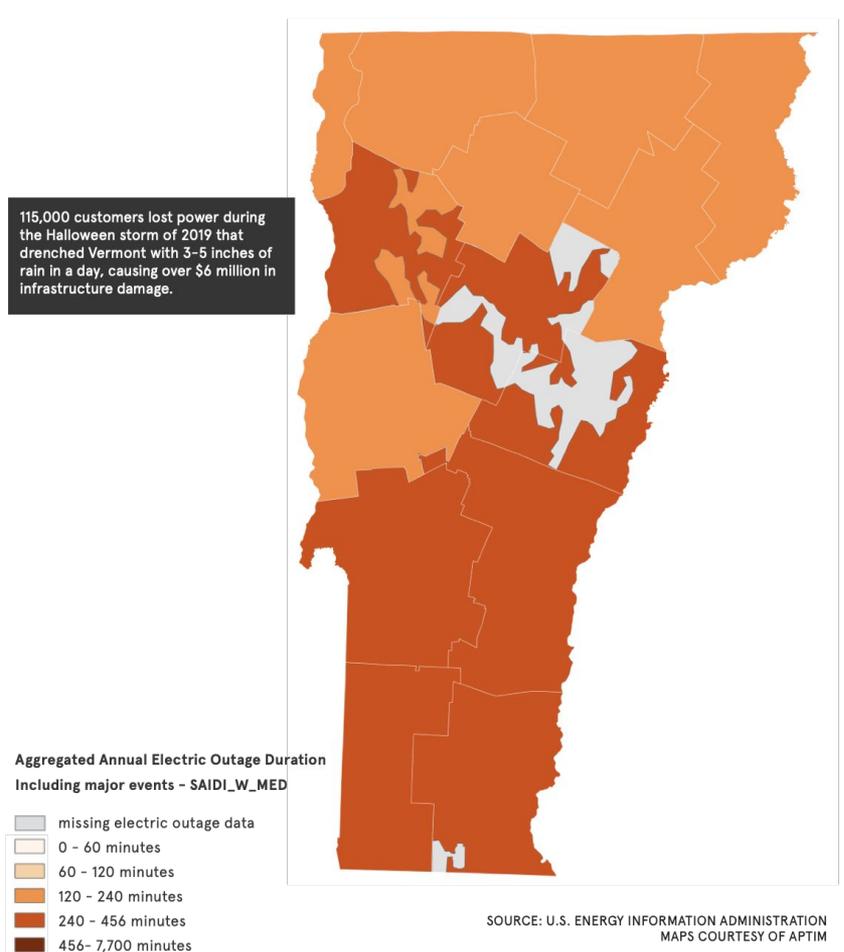
SOCIAL VULNERABILITY INDEX 2011-2021

AREAS OF GREATEST SOCIAL VULNERABILITY



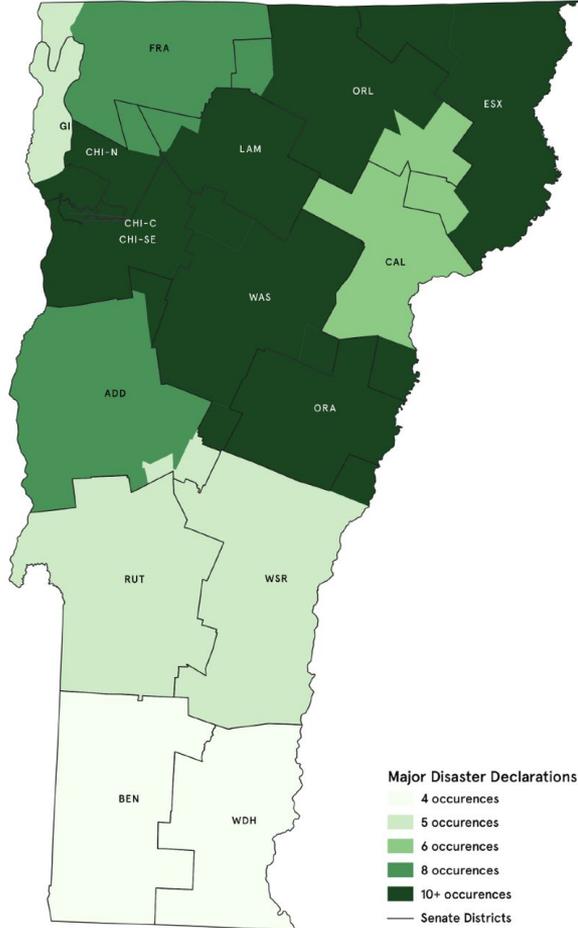
ENERGY RELIABILITY 2011-2021

COUNTIES AT GREATEST RISK OF POWER OUTAGES



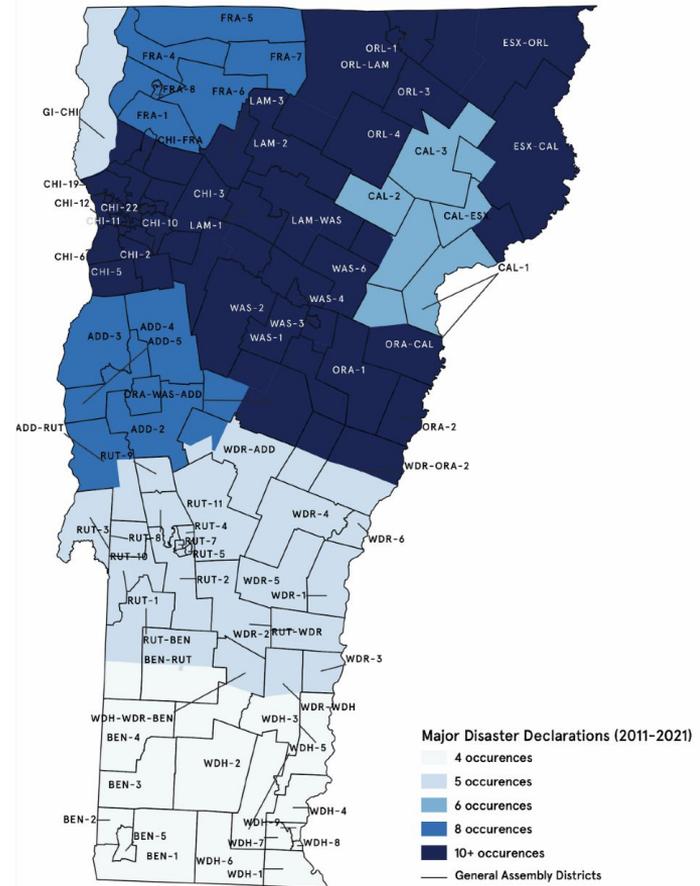
VT SENATE DISTRICTS

MAJOR DISASTER DECLARATIONS 2011-2021



VT GENERAL ASSEMBLY DISTRICTS

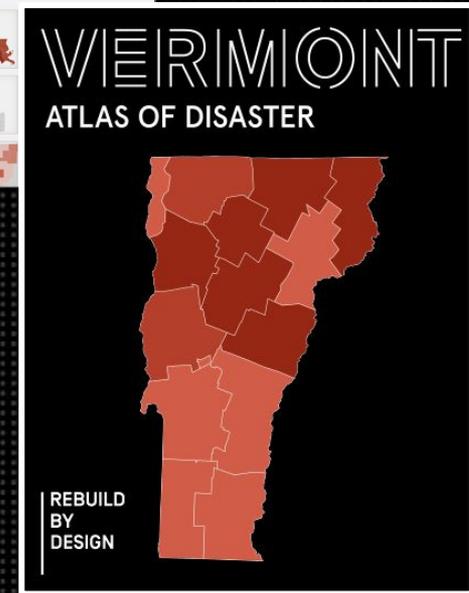
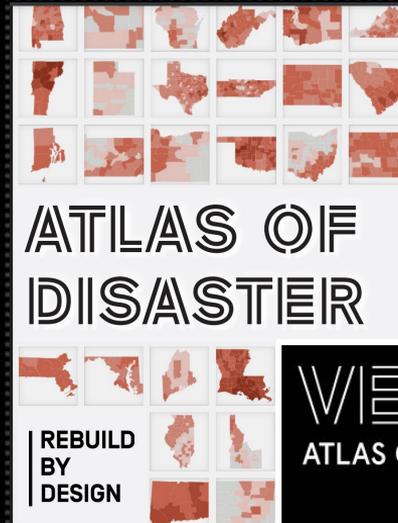
MAJOR DISASTER DECLARATIONS 2011-2021



SOURCE: FEMA 2021; VT LEGISLATIVE BOUNDARIES
MAPS COURTESY OF IPARAMETRICS

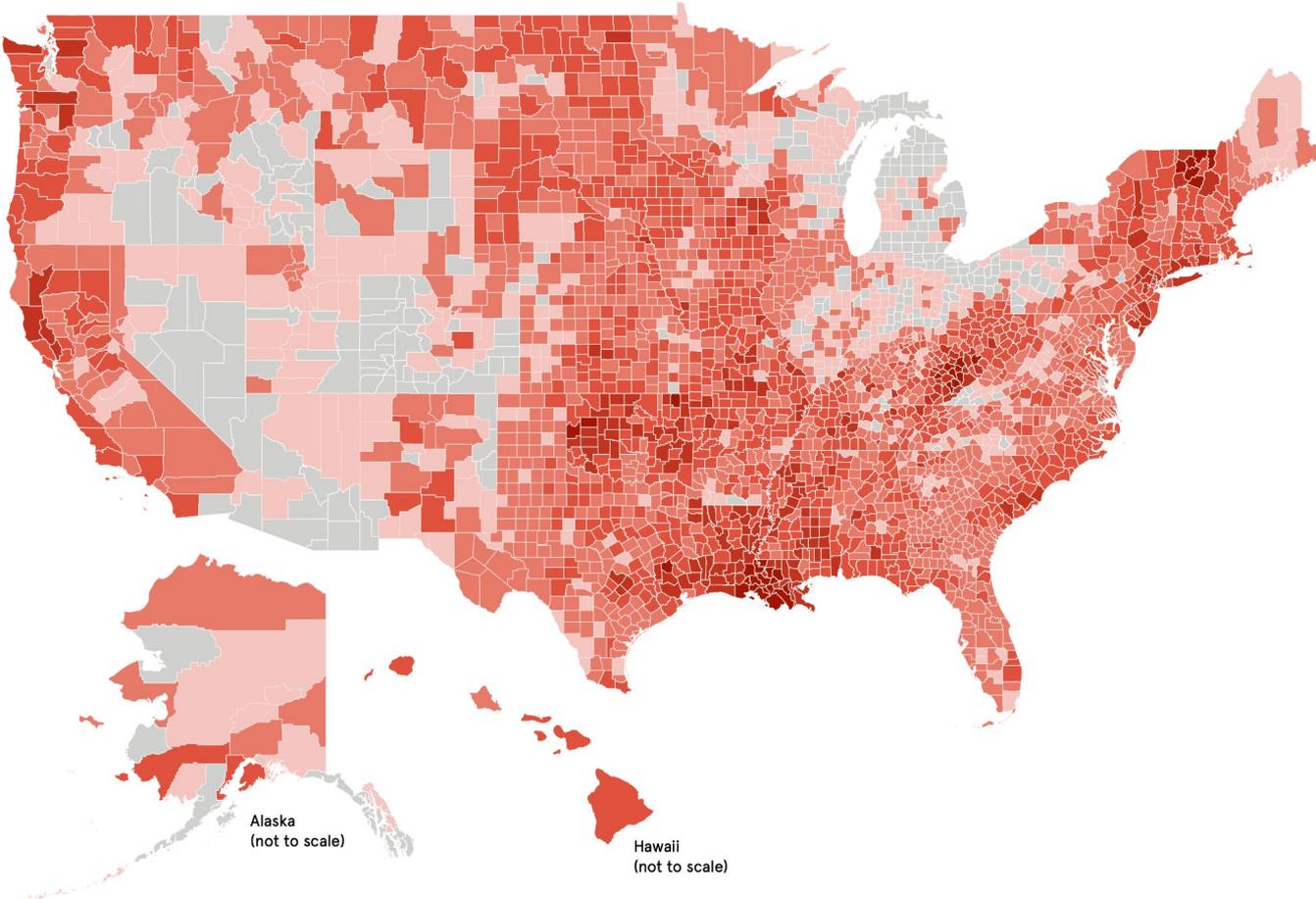
ATLAS OF DISASTER

1. County-level data for the entire U.S. - over 300 maps
2. Status of current disaster and adaptation practices, and discussion of what should be changed
3. Cost of Inaction
4. **Guide for States to build a Collaborative Program**
5. **New Finance tools**
6. Cost Benefit Reform
7. Recommendations



Created in partnership with APTIM and iParametrics

U.S. DISASTER OCCURRENCES 2011-2021





**90% of counties in the
U.S. have had a federal
disaster declaration due
to extreme weather
between 2011-2021.**

Alaska
(not to scale)

Hawaii
(not to scale)

CLIMATE CHANGE IS COMING

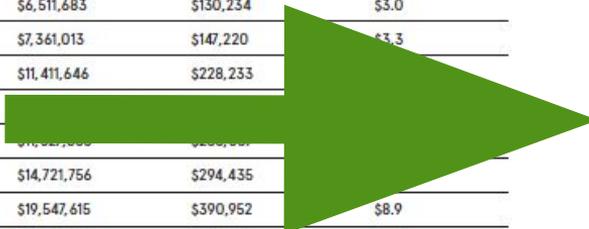
CLIMATE CHANGE ~~IS COMING~~

CLIMATE CHANGE IS HERE.

**VERMONT NEEDS SUSTAINABLE
SOURCES OF LONG-TERM
CLIMATE ADAPTATION
INFRASTRUCTURE FUNDING.**

CAPACITY OF A TWO PERCENT SURCHARGE P&C INSURANCE

	TOTAL INSURED P&C	TOTAL INSURED WITHOUT MED MAL AND WC	TWO PERCENT SURCHARGE WITHOUT BONDING	TWO PERCENT SURCHARGE WITH 10-YEAR BONDING(IN BILLIONS)
Total 50 States	\$695,509,700	\$629,385,861	\$12,587,717	\$287.1
Alabama	\$9,464,513	\$8,948,954	\$178,979	\$4.1
Alaska	\$1,655,434	\$1,402,346	\$28,047	\$0.6
Arizona	\$12,414,975	\$11,338,136	\$226,763	\$5.1
Arkansas	\$5,706,307	\$5,396,813	\$107,936	\$2.4
California	\$84,880,338	\$72,448,508	\$1,448,970	\$32.9
Colorado	\$14,285,006	\$13,069,112	\$261,382	\$5.9
Connecticut	\$8,992,575	\$8,131,839	\$162,637	\$3.7
Delaware	\$2,906,697	\$2,664,456	\$53,289	\$1.2
Florida	\$55,576,482	\$51,794,341	\$1,035,887	\$23.5
Georgia	\$22,954,861	\$20,953,153	\$419,063	\$9.5
Hawaii	\$2,701,615	\$2,381,525	\$47,631	\$1.1
Idaho	\$3,231,796	\$2,759,183	\$55,184	\$1.3
Illinois	\$27,060,540	\$24,181,953	\$483,639	\$11.0
Indiana	\$12,037,170	\$11,100,606	\$222,012	\$5.0
Iowa	\$6,790,563	\$6,069,738	\$121,395	\$2.8
Kansas	\$6,980,593	\$6,511,683	\$130,234	\$3.0
Kentucky	\$8,042,654	\$7,361,013	\$147,220	\$3.3
Louisiana	\$12,396,192	\$11,411,646	\$228,233	\$5.2
Maine	\$2,476,882	\$2,246,882	\$47,000	\$1.1
Maryland	\$12,684,730	\$11,684,730	\$1,000,000	\$22.2
Massachusetts	\$16,354,175	\$14,721,756	\$294,435	\$6.6
Michigan	\$20,817,467	\$19,547,615	\$390,952	\$8.9
Minnesota	\$12,462,639	\$11,416,765	\$228,335	\$5.2



	TOTAL INSURED P&C	TOTAL INSURED WITHOUT MED MAL AND WC	TWO PERCENT SURCHARGE WITHOUT BONDING	TWO PERCENT SURCHARGE WITH 10-YEAR BONDING(IN BILLIONS)
Mississippi	\$5,591,834	\$5,192,253	\$103,845	\$2.4
Missouri	\$12,677,046	\$11,576,608	\$231,532	\$5.3
Montana	\$2,603,859	\$2,293,122	\$45,862	\$1.0
Nebraska	\$5,246,314	\$4,842,941	\$96,859	\$2.2
Nevada	\$6,256,046	\$5,736,060	\$114,721	\$2.6
New Hampshire	\$2,594,294	\$2,323,267	\$46,465	\$1.1
New Jersey	\$22,875,472	\$19,993,159	\$399,863	\$9.1
New Mexico	\$3,749,295	\$3,392,114	\$67,842	\$1.5
New York	\$47,566,816	\$42,816,816	\$4,800,000	\$108.0
North Carolina	\$17,059,009	\$15,816,009	\$1,243,000	\$28.0
North Dakota	\$2,616,611	\$2,316,611	\$200,000	\$4.4
Ohio	\$17,738,127	\$16,238,127	\$1,500,000	\$33.0
Oklahoma	\$8,605,457	\$7,805,457	\$800,000	\$17.6
Oregon	\$7,732,347	\$6,932,347	\$800,000	\$17.6
Pennsylvania	\$26,196,056	\$22,196,056	\$4,000,000	\$88.0
Rhode Island	\$2,644,794	\$2,344,794	\$300,000	\$6.6
South Carolina	\$10,636,489	\$9,736,489	\$900,000	\$19.8
South Dakota	\$2,555,563	\$2,255,563	\$300,000	\$6.6
Tennessee	\$12,534,747	\$11,134,747	\$1,400,000	\$30.0
Texas	\$61,402,995	\$58,402,995	\$3,000,000	\$66.0
Utah	\$5,405,102	\$4,898,669	\$97,973	\$2.2
Vermont	\$1,506,858	\$1,302,233	\$26,045	\$0.6
Virginia	\$14,885,228	\$13,589,738	\$271,795	\$6.2
Washington	\$16,288,384	\$13,551,966	\$271,039	\$6.2
West Virginia	\$3,165,210	\$2,795,077	\$55,902	\$1.3
Wisconsin	\$11,213,538	\$9,196,595	\$183,932	\$4.2
Wyoming	\$1,288,005	\$1,263,939	\$25,279	\$0.6

\$600 million/10 years

\$0.6

INFRASTRUCTURE RESILIENCE CHARGE BENEFITS

- **Progressive**, by surcharging property wealth protection.
- Would go directly back to making those insured assets **more resilient**.
- Could decrease **certain insurance premiums**. FEMA's community rating program will reward community-wide actions that lower risk by reducing flood insurance premiums 5% - 45%
- The investment can **seed a new industry** and support thousands of jobs



The National Guard

INSTITUTIONALIZING EQUITY INTO THE PROGRAM

The surcharge could be instituted on the types of insurance that would broadly be impacted by climate, and not on lines such as workers compensation or medical malpractice.

It could also exempt the lowest income policy holders and affordable housing.

P& C Insurance: Written Premium Source	Vermont	Broadly supporting policy
YEAR: 2019		
Fire	\$32,092	\$32,092
Allied lines (accounts receivable, data-processing equipment, water damage and vandalism)	\$16,603	\$16,603
Crop Total	\$3,043	\$3,043
Multiple Peril Crop	\$3,041	\$3,041
Federal flood	\$4,634	\$4,634
Private Flood	\$586	\$586
Farmowners	\$15,600	\$15,600
Homeowners multiple peril	\$212,610	\$212,610
Commercial multiple peril Total	\$145,376	\$145,376
Comm'l Multi Pri (Liab)	\$55,325	\$55,325
Comm'l Multi Pri (Non-Liab)	\$90,051	\$90,051
Mortgage guaranty	\$12,409	\$12,409
Ocean Marine	\$3,871	
Inland Marine	\$49,736	
Medical professional liability	\$17,034	
Earthquake	\$28,697	\$28,697
Workers Comp. Total	\$187,591	
Workers' compensation	\$185,438	
Excess worker comp.	\$2,153	
Other liability Total	\$110,454	\$110,454
Oth Liab (Claims)	\$38,710	
Oth Liab (Occurrence)	\$71,744	
Products liability	\$6,387	
Automobile Total	\$473,912	\$473,912
Comm'l Auto Phys	\$28,590	\$28,590
Oth Comm'l Auto Liab	\$49,860	\$49,860
Oth Pvt Pass Auto Liab	\$186,550	\$186,550
Pvt Pass Auto Phys Damage	\$208,911	\$208,911
Aircraft (all perils)	\$1,624	
Fidelity (fraudulent acts)	\$3,550	
Surety (guarantor for project completion)	\$8,791	
Burglary and theft	\$646	
Boiler and machinery	\$5,259	\$5,259
Credit	\$2,755	
Warranty	\$8,818	
Agg. Write-ins for other lines/Other P&C	\$140,220	
Accident & Health Total	\$14,560	
Group A&H	\$12,971	
Grtd Renewable A&H	\$1,035	
Oth A&H	\$546	
	\$1,506,858	Total
1.5 percent surcharge	\$22,603	

INSURANCE SURCHARGE BILLS VERMONT S.145 / H.105

SUGGESTED REVISIONS:

Determine the surcharge through a percentage instead of a set amount. This will ensure that the fund will grow over time and be responsive to the needs.

Define where the types of projects the fund will support
Example: The NYS Bond Act included buckets such as \$1.1 Billion for water infrastructure, \$250 Million for retreat, \$650 Million for Open Space Conservation and Recreation, etc. this will ensure that the money goes to its intended uses and voters will support.



Atlas of Disaster, 2022

CREATE A STATE SUPERFUND H.809/S259

- Holds polluters accountable for profiting on the back of our health and environment
- Direct policy connection - those who made the mess should fund the cleanup
- Can raise \$2.5 Billion



\$27

million in estimated crop losses spurred a federal disaster declaration for 10 Vermont counties in 2020, due to severe drought conditions.

COMMUNITIES ARE VOTING FOR ADAPTATION FUNDING

RECENT VOTER-APPROVED BALLOT MEASURES

YEAR	LOCALITY	AMOUNT	PURPOSE	STATUS
2022	New York	\$4.2 billion bond	Ecological and Climate Resilience	67.5%
2021	Denver, CO	\$40 million per year	Raised the city's sales tax by 0.25% to address climate - both mitigation and adaptation efforts. 50% of the fund is directed toward underserved communities	62.34%
2021	Maine	\$100 million bond	Municipal, regional and state infrastructure adaptation improvements that support public safety and emergency management and infrastructure resiliency	72%
2021	Virginia Beach, VA	\$567.5 million bond	Design and construction of flood mitigation measures as part of a comprehensive flood protection program	72.72%
2020	Key Biscayne, FL (Miami-Dade County)	\$100 million bond	\$40 million for mitigating the effects of sea level rise and flooding, \$23 million for protecting the beaches and shoreline, and more than \$35 million to harden and place infrastructure underground to withstand hurricanes.	56.55%
2018	California	\$4 billion bond	Environmental and recreational purposes	57.59%
2018	Harris County, TX	\$2.5 billion bond	Flood damage reduction projects	85%
2018	San Francisco Bay Area, CA	\$425 million bond	Seismic strengthening and flood protection projects for the hundred-year-old Embarcadero seawall and other critical infrastructure	82.7%
2017	Miami, FL	\$400 million	Sea-Level Rise and Flood Prevention, Roadways, Parks and Cultural Facilities, Public Safety and Affordable Housing	55%
2016	San Francisco Bay Area, CA	\$12 parcel tax to raise approximately \$25 million annually, or \$500 million over twenty years	San Francisco Bay: wetlands restoration to address clean water, pollution prevention, and habitat restoration	69%
2012	Rhode Island	\$20 million	Bond for environmental and recreational purposes	69.8%

NYS ENVIRONMENTAL BOND ACT

Created the research, strategy, and coalition that led former Governor Andrew Cuomo to create the **\$3 billion** Environmental Bond Act that provides ecological restoration and flood resilience.

Governor Kathy Hochul, recognizing additional needs, recently proposed to increase the Bond Act to **\$4.2 billion**.

The Bond Act was approved by voters in **November 2022**.



THIS IS NOT EASY: WE CAN WORK TOGETHER

- 1 Mobilize investments in climate infrastructure
- 2 Shift investments from post-disaster to pre-disaster
- 3 Catalyze collaborative planning processes that bring together businesses, residents, and the broader VT community

**REBUILD
BY
DESIGN**

QUESTIONS

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The logo for Rebuild By Design features the organization's name in a bold, white, sans-serif font, stacked vertically. A thick white vertical line is positioned to the left of the text, extending from the top of the word 'REBUILD' down to the bottom of the word 'DESIGN'.

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