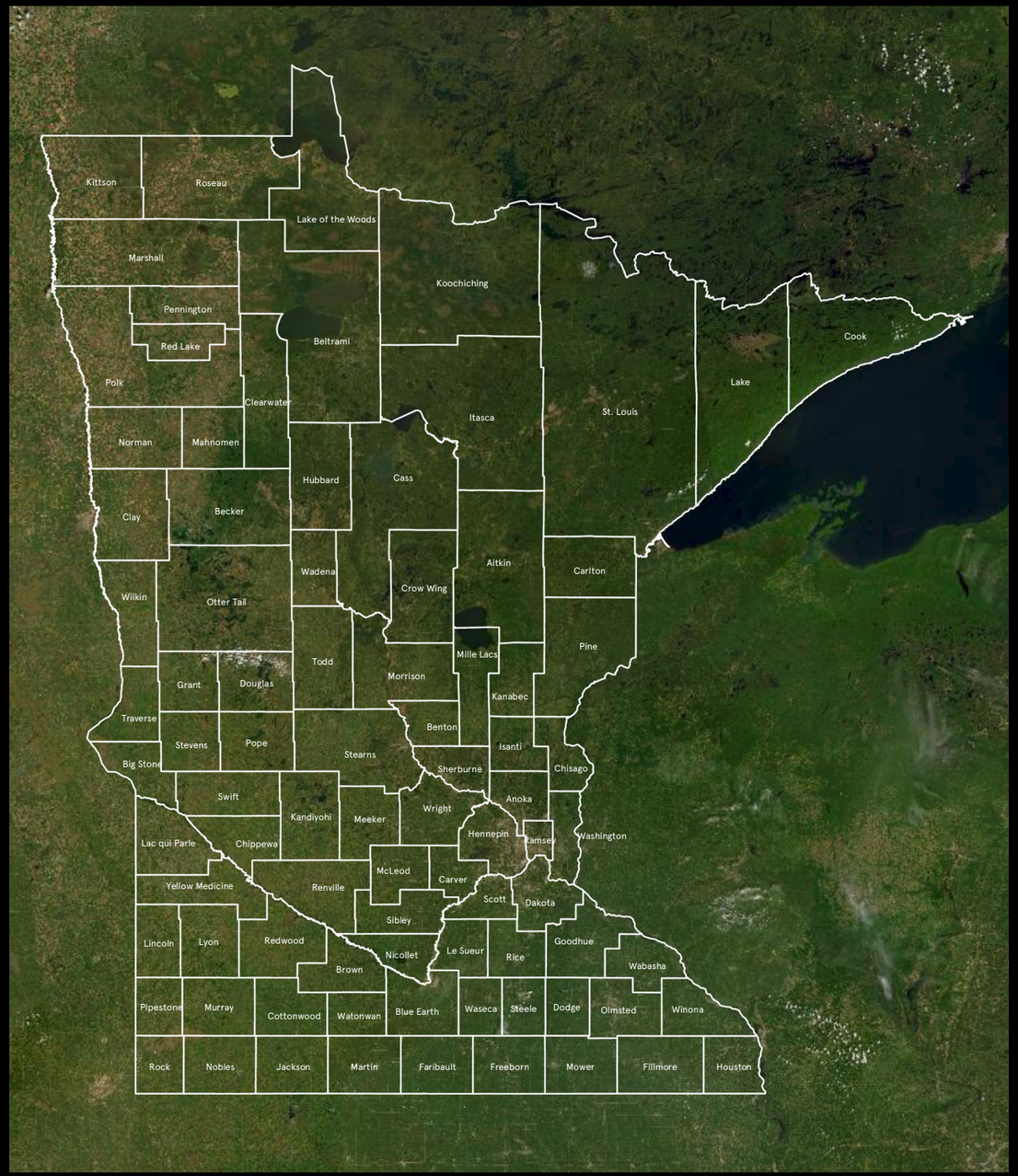
MINNESOTA



MINNESOTA STATISTICS SUMMARY (2011 – 2024)	
16	CLIMATE DISASTER DECLARATIONS
$348.5 MILLION	FEMA + HUD POST-DISASTER FUNDING
5.7 MILLION PEOPLE	POPULATION TOTAL
$61	PER CAPITA SPENDING ON CLIMATE DISASTERS
RENVILLE (9 DISASTERS)	COUNTY WITH THE HIGHEST DISASTER OCCURRENCES
41	COUNTIES HAVE HAD FIVE OR MORE DISASTERS
82K PEOPLE	LIVE IN AREAS WITH VERY HIGH SOCIAL VULNERABILITY (SVI > 0.75)
2.1 HOURS	TOTAL OUTAGE DURATION (HOURS PER CUSTOMER PER YEAR)
C (2022)	ASCE INFRASTRUCTURE REPORT CARD GRADE
49	SUPERFUND SITES
$5.2 BILLION	CLIMATE INFRASTRUCTURE SUPPORTED THROUGH SMALL INSURANCE SURCHARGE
$5.2 BILLION	OF CLIMATE INFRASTRUCTURE COULD BE SUPPORTED THROUGH A SMALL INSURANCE SURCHARGE

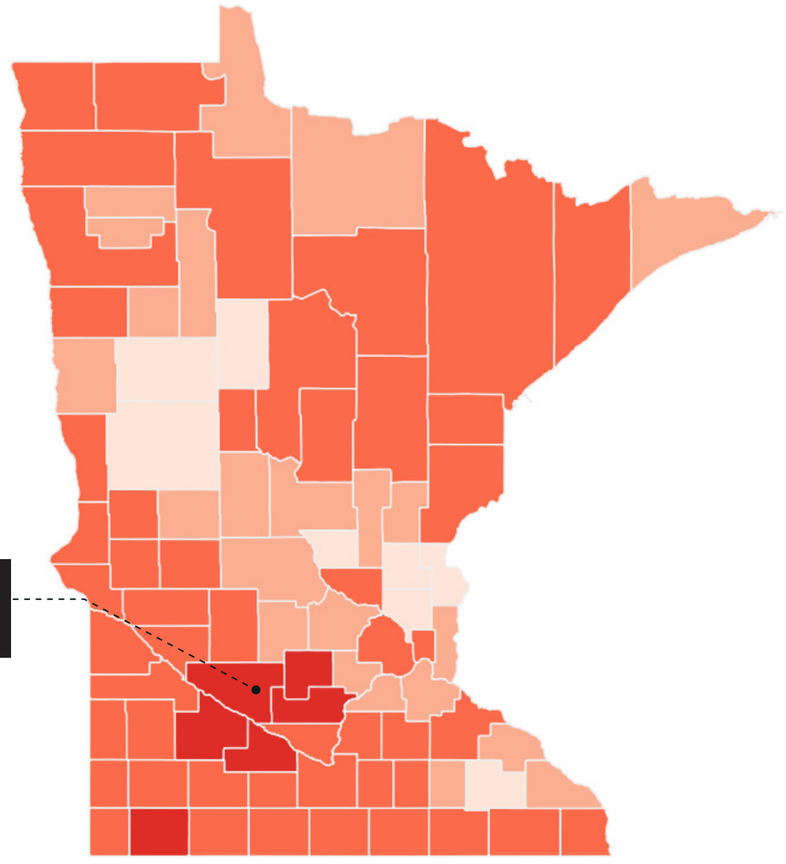
DISASTER OCCURRENCES 2011–2024

FEDERALLY DECLARED MAJOR DISASTERS BY COUNTY

16
disaster declarations

47% of counties in Minnesota have had 5 or more recent disasters.

Renville County has had the most recent disasters in Minnesota: 9 disasters.



Number of Disaster Events

Major Disaster Declarations (2011-2024)

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

MAP MADE BY REBUILD BY DESIGN
FEMA DATA COURTESY OF IPARAMETRICS

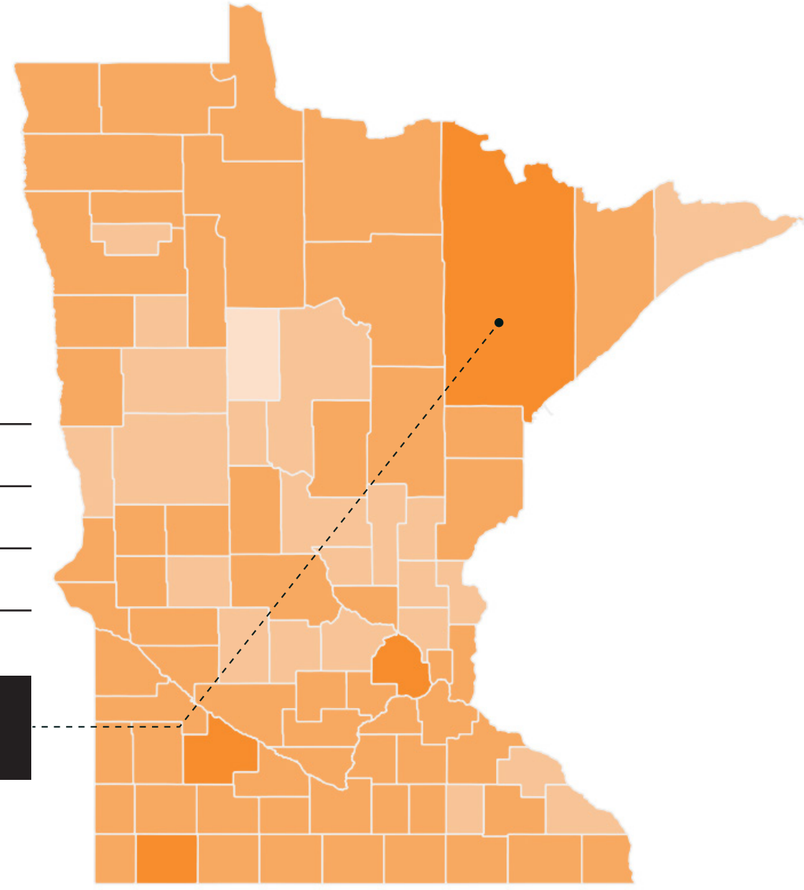
FEDERAL ASSISTANCE 2011–2024

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

$349M
post-disaster assistance

$349	FEMA obligations
$0	HUD CDBG-DR Funds
$349	FEMA + HUD assistance
$61	per capita cost

St. Louis has received the most post-disaster FEMA funds in the state: over $322 million.



FEMA Public Assistance and Hazard Mitigation

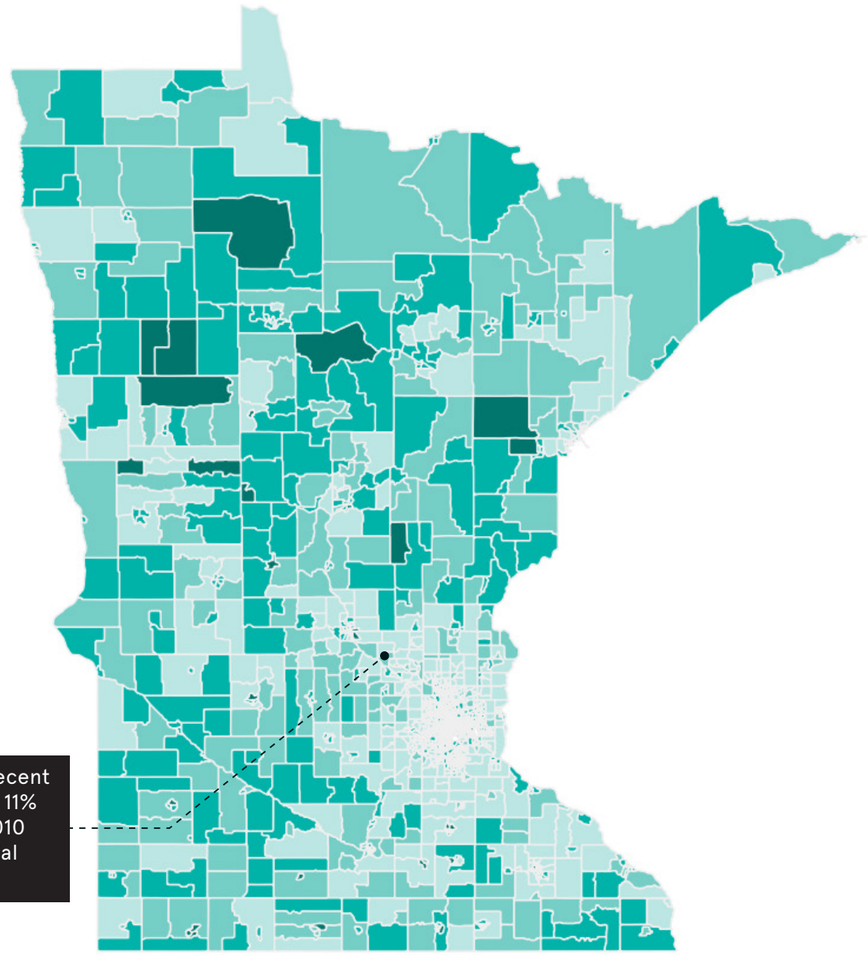
Federal Share Obligated (2011-2024)

- $0 to $100K
- $100K to $1M
- $1M to $10M
- $10M to $50M
- $50M to $100M
- $100M to $500M

MAP MADE BY REBUILD BY DESIGN
FEMA DATA COURTESY OF IPARAMETRICS

SOCIAL VULNERABILITY INDEX 2022

AREAS OF GREATEST SOCIAL VULNERABILITY



Sherburne County had 6 recent disasters and experienced 11% population growth from 2010 to 2024, but has a low social vulnerability of 0.1.

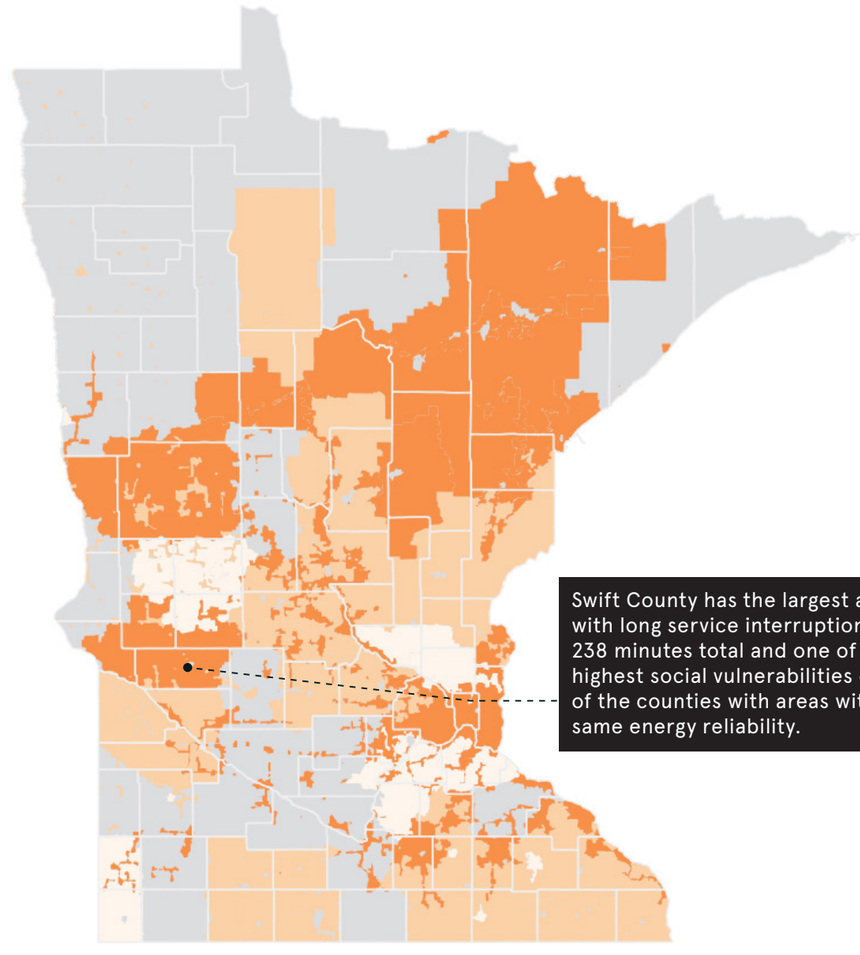
Social Vulnerability Index
CDC (2022)

- No Value
- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

MAP MADE BY REBUILD BY DESIGN
DATA SOURCE: CDC/ATSDR 2022 SVI

ENERGY RELIABILITY 2023

COUNTIES AT GREATEST RISK OF POWER OUTAGES



Swift County has the largest area with long service interruptions of 238 minutes total and one of the highest social vulnerabilities out of the counties with areas with the same energy reliability.

Aggregated Annual Electric Outage Duration
Including major events - SAIDI_W_MED

- missing electric outage data
- 0 - 60 minutes
- 60 - 120 minutes
- 120 - 240 minutes
- 240 - 456 minutes
- 456- 7,700 minutes

MAP MADE BY REBUILD BY DESIGN
SOURCE: U.S. ENERGY INFORMATION ADMINISTRATION 2023

TOTAL: 16 DISASTERS
FEMA PA + HM: $348.5 M
HUD CDBG-DR: $0
FEMA + HUD ASSISTANCE: $348.5 M

				Total		2011						2012		2013				2014		2016		2018		2019				2022				2023		2024	
						1982: SEVERE STORMS AND FLOODING		1990: SEVERE STORMS AND TORNADOES		4009: SEVERE STORMS, FLOODING, AND TORNADOES		4069: SEVERE STORMS AND FLOODING		4113: SEVERE WINTER STORM		4131: SEVERE STORMS, STRAIGHT-LINE WINDS, AND FLOODING		4182: SEVERE STORMS, STRAIGHT-LINE WINDS, FLOODING, LANDSLIDES, AND MUDSLIDES		4290: SEVERE STORMS AND FLOODING		4390: SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING		4414: SEVERE STORMS AND FLOODING		4442: SEVERE WINTER STORM, STRAIGHT-LINE WINDS, AND FLOODING		4658: SEVERE STORMS, STRAIGHT-LINE WINDS, TORNADOES, AND FLOODING		4659: SEVERE STORMS, STRAIGHT-LINE WINDS, AND FLOODING		4666: SEVERE STORMS, STRAIGHT-LINE WINDS, TORNADOES, AND FLOODING		4722: SEVERE STORMS AND FLOODING		4797: SEVERE STORMS AND FLOODING	
GEOID	COUNTY NAME	# OF DISASTERS	FEMA TOTAL	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
27000	27000: Statewide	16	$55,785,852.56	$52,504,127.86	$3,281,724.70	$2,018,357.48	$151,562.00	$142,524.20	$67,839.00	$5,227,579.01	$105,445.00	$12,696,183.72	$323,453.00	$453,503.34	$58,885.00	$943,468.67	$98,799.23	$7,842,836.67	$300,885.41	$760,790.85	$69,056.00	$2,885,685.74	$419,285.00	$556,912.13	$111,718.65	$9,533,315.08	$437,894.28	$2,636,136.70	$315,237.19	$2,437,241.51	$523,440.36	$2,364,002.36	$113,031.44	$707,034.61	$185,193.14	$1,298,555.79	$0.00
27001	27001: Aitkin County	5	$3,499,638.30	$3,499,638.30	$0.00							$1,755,761.38	$0.00									$390,902.41	$0.00					$782,133.18	$0.00			$94,182.45	$0.00	$476,658.88	$0.00		
27003	27003: Anoka County	1	$100,989.70	$100,989.70	$0.00			$100,989.70	$0.00																												
27005	27005: Becker County	1	$276,350.49	$276,350.49	$0.00	$276,350.49	$0.00																														
27007	27007: Beltrami County	5	$1,990,385.98	$1,990,385.98	$0.00	$492,038.96	$0.00											$80,355.85	$0.00			$442,051.48	$0.00							$967,843.09	$0.00	$8,096.60	$0.00				
27009	27009: Benton County	1	$220,343.13	$220,343.13	$0.00											$220,343.13	$0.00																				
27011	27011: Big Stone County	6	$1,603,687.44	$1,603,687.44	$0.00	$328,057.77	$0.00									$55,692.60	$0.00									$654,892.02	$0.00	$110,582.79	$0.00			$16,493.10	$0.00	$437,969.16	$0.00		
27013	27013: Blue Earth County	6	$8,250,917.82	$7,490,665.48	$760,252.34	$165,943.24	$13,862.00											$1,448,951.81	$0.00	$1,383,342.89	$284,431.50	$320,973.28	$215,155.06			$3,382,105.49	$246,803.78									$789,348.77	$0.00
27015	27015: Brown County	8	$9,866,937.09	$5,286,926.06	$4,580,011.03	$749,553.95	$0.00			$14,701.82	$0.00			$19,081.08	$0.00			$1,010,845.42	$787,699.00			$1,103,461.27	$0.00			$2,090,730.08	$3,792,312.03	$5,100.00	$0.00							$293,452.44	$0.00
27017	27017: Carlton County	4	$6,803,721.86	$6,630,557.86	$173,164.00	$22,189.50	$0.00					$4,985,599.04	$173,164.00									$1,222,915.69	$0.00											$399,853.63	$0.00		
27019	27019: Carver County	3	$2,194,086.24	$1,997,649.61	$196,436.63	$344,633.87	$0.00											$1,586,909.48	$196,436.63																		
27021	27021: Cass County	5	$839,152.53	$839,152.53	$0.00							$301,109.05	$0.00									$237,306.22	$0.00					$112,158.46	$0.00			$37,548.45	$0.00			$151,030.35	$0.00
27023	27023: Chippewa County	6	$5,463,382.95	$5,422,516.20	$40,866.75	$498,948.86	$0.00											$251,923.55	$0.00							$1,942,794.51	$40,866.75	$1,961,609.69	$0.00			$619,863.69	$0.00	$147,375.90	$0.00		
27025	27025: Chisago County	1	$116,934.54	$116,934.54	$0.00					$116,934.54	$0.00																										
27027	27027: Clay County	3	$5,605,822.20	$5,588,820.60	$17,001.60	$4,382,629.39	$0.00																			$718,359.99	$17,001.60							$487,831.22	$0.00		
27029	27029: Clearwater County	2	$1,136,772.64	$1,136,772.64	$0.00																	$102,242.06	$0.00							$1,034,530.58	$0.00						
27031	27031: Cook County	3	$316,166.55	$316,166.55	$0.00							$49,070.73	$0.00																	$15,478.92	$0.00					$251,616.90	$0.00
27033	27033: Cottonwood County	5	$1,770,682.82	$1,712,848.07	$57,834.75									$168,986.48	$0.00							$491,843.59	$0.00			$482,995.28	$57,834.75	$0.00	$0.00					$569,022.72	$0.00
27035	27035: Crow Wing County	6	$5,467,158.21	$5,467,158.21	$0.00							$407,489.83	$0.00			$6,666.50	$0.00					$4,720,531.89	$0.00			$11,716.29	$0.00			$22,222.50	$0.00	$298,531.20	$0.00				
27037	27037: Dakota County	2	$1,474,205.29	$1,474,205.29	$0.00	$22,377.06	$0.00					$1,451,828.23	$0.00																								
27039	27039: Dodge County	3	$309,277.39	$309,277.39	$0.00													$222,515.57	$0.00							$0.00	$0.00							$86,761.82	$0.00		
27041	27041: Douglas County	3	$1,502,005.68	$1,502,005.68	$0.00											$298,773.14	$0.00											$333,376.02	$0.00			$869,856.52	$0.00				
27043	27043: Faribault County	5	$3,204,703.32	$3,204,703.32	$0.00											$156,729.57	$0.00	$190,297.58	$0.00			$890,042.31	$0.00			$1,768,615.90	$0.00							$199,017.96	$0.00		
27045	27045: Fillmore County	4	$2,979,117.88	$2,979,117.88	$0.00											$1,275,564.03	$0.00			$646,160.81	$0.00					$858,067.03	$0.00							$199,326.01	$0.00		
27047	27047: Freeborn County	5	$4,300,455.02	$4,300,455.02	$0.00											$917,614.48	$0.00	$855,235.82	$0.00	$968,266.16	$0.00					$1,225,177.98	$0.00							$334,160.58	$0.00		
27049	27049: Goodhue County	5	$2,309,121.69	$2,309,121.69	$0.00							$1,307,189.36	$0.00							$181,688.87	$0.00					$428,350.85	$0.00					$29,453.54	$0.00	$362,439.07	$0.00		
27051	27051: Grant County	6	$1,648,958.46	$1,648,958.46	$0.00	$632,847.65	$0.00									$495.59	$0.00									$705,760.29	$0.00	$16,687.24	$0.00			$107,672.52	$0.00	$185,495.17	$0.00		
27053	27053: Hennepin County	4	$14,008,051.29	$13,992,639.29	$15,412.00			$3,305,096.53	$15,412.00							$4,112,656.92	$0.00	$6,574,885.84	$0.00	$0.00	$0.00																
27055	27055: Houston County	5	$4,462,177.10	$4,437,692.10	$24,485.00											$3,049,212.32	$24,485.00			$878,049.70	$0.00					$333,622.10	$0.00							$133,046.24	$0.00	$43,761.74	$0.00
27057	27057: Hubbard County	1	$3,024.90	$3,024.90	$0.00	$3,024.90	$0.00																														
27059	27059: Isanti County	1	$158,236.37	$158,236.37	$0.00					$158,236.37	$0.00																										
27061	27061: Itasca County	5	$2,178,064.82	$2,178,064.82	$0.00							$299,163.21	$0.00									$572,419.54	$0.00							$933,767.15	$0.00	$203,255.85	$0.00			$169,459.07	$0.00
27063	27063: Jackson County	5	$8,054,190.42	$7,976,443.67	$77,746.75									$1,632,540.77	$23,692.00			$242,397.55	$0.00			$720,677.99	$0.00			$5,078,019.58	$54,054.75							$302,807.78	$0.00
27065	27065: Kanabec County	3	$626,685.89	$626,685.89	$0.00					$45,084.44	$0.00											$567,737.33	$0.00									$13,864.12	$0.00				
27067	27067: Kandiyohi County	5	$329,771.10	$329,771.10	$0.00	$1,271.26	$0.00			$0.00	$0.00	$3,726.18	$0.00															$324,773.66	$0.00			$0.00	$0.00				
27069	27069: Kittson County	4	$2,900,866.22	$2,710,591.22	$190,275.00	$482,665.77	$0.00																			$487,965.27	$190,275.00			$1,577,738.64	$0.00			$162,221.54	$0.00		
27071	27071: Koochiching County	3	$3,081,468.26	$3,081,468.26	$0.00													$797,289.04	$0.00			$137,491.03	$0.00							$2,146,688.19	$0.00						
27073	27073: Lac qui Parle County	6	$2,219,139.81	$2,114,297.81	$104,842.00	$287,848.17	$0.00											$38,361.08	$104,842.00							$1,023,990.52	$0.00	$302,901.28	$0.00					$461,196.76	$0.00		
27075	27075: Lake County	4	$1,615,558.74	$1,615,558.74	$0.00							$856,275.81	$0.00									$426,186.94	$0.00							$209,924.57	$0.00			$123,171.42	$0.00
27077	27077: Lake of the Woods County	3	$1,591,172.69	$1,591,172.69	$0.00													$45,623.09	$0.00											$1,336,312.51	$0.00			$209,237.09	$0.00		
27079	27079: Le Sueur County	5	$2,451,986.86	$2,311,759.74	$140,227.12	$333,390.57	$0.00											$636,154.98	$140,227.12	$255,477.19	$0.00					$931,282.29	$0.00							$155,454.71	$0.00		
27081	27081: Lincoln County	4	$2,032,126.90	$2,032,126.90	$0.00					$1,249,556.30	$0.00															$657,775.59	$0.00	$65,486.85	$0.00			$59,308.16	$0.00				
27083	27083: Lyon County	6	$2,613,873.90	$2,613,873.90	$0.00	$103,657.25	$0.00			$448,207.96	$0.00							$110,221.86	$0.00			$1,090,525.40	$0.00			$810,889.28	$0.00					$50,372.15	$0.00				
27085	27085: McLeod County	8	$3,221,193.54	$2,544,767.79	$676,425.75	$162,937.13	$0.00			$404,091.37	$0.00					$153,197.20	$0.00	$351,732.51	$0.00							$1,370,648.46	$676,425.75	$24,694.20	$0.00			$7,337.11	$0.00			$70,129.81	$0.00
27087	27087: Mahnomen County	3	$404,581.68	$404,581.68	$0.00																					$74,367.05	$0.00			$186,572.37	$0.00			$143,642.26	$0.00		
27089	27089: Marshall County	5	$5,120,277.92	$5,120,277.92	$0.00	$825,017.31	$0.00											$62,535.49	$0.00							$1,364,688.94	$0.00			$2,592,295.43	$0.00			$275,740.75	$0.00		
27091	27091: Martin County	4	$1,486,330.42	$1,486,330.42	$0.00													$253,761.46	$0.00			$414,885.77	$0.00			$605,891.06	$0.00							$211,792.13	$0.00
27093	27093: Meeker County	2	$131,838.43	$109,338.43	$22,500.00					$51,744.84	$22,500.00	$57,593.59	$0.00																								
27095	27095: Mille Lacs County	2	$127,046.75	$127,046.75	$0.00					$29,937.38	$0.00																					$97,109.37	$0.00				
27097	27097: Morrison County	3	$529,475.85	$529,475.85	$0.00											$176,230.46	$0.00											$199,786.35	$0.00					$153,459.04	$0.00		
27099	27099: Mower County	4	$2,294,363.19	$2,095,002.70	$199,360.49																					$713,985.07	$199,360.49	$48,276.63	$0.00			$1,040,838.24	$0.00			$291,902.76	$0.00
27101	27101: Murray County	6	$5,326,549.98	$5,305,348.23	$21,201.75									$457,702.01	$0.00			$299,641.67	$0.00			$1,936,249.70	$0.00			$2,097,729.83	$0.00					$142,289.22	$21,201.75			$371,735.80	$0.00
27103	27103: Nicollet County	5	$2,739,062.50	$2,739,062.50	$0.00	$55,558.88	$0.00											$826,583.75	$0.00			$437,054.67	$0.00			$964,139.29	$0.00							$455,725.91	$0.00		
27105	27105: Nobles County	7	$16,019,863.95	$13,161,450.95	$2,858,413.00									$7,343,745.58	$18,402.00			$399,070.19	$2,840,011.00			$616,563.98	$0.00			$3,725,580.39	$0.00	$119,408.56	$0.00			$80,051.45	$0.00			$877,030.80	$0.00
27107	27107: Norman County	4	$6,701,762.01	$3,419,866.71	$3,281,895.30	$1,181,768.04	$0.00																			$1,028,041.83	$1,356,645.30			$271,167.29	$1,925,250.00			$938,889.55	$0.00		
27109	27109: Olmsted County	1	$6,193,517.53	$6,193,517.53	$0.00																					$6,193,517.53	$0.00										
27111	27111: Otter Tail County	1	$123,630.10	$123,630.10	$0.00	$123,630.10	$0.00																														
27113	27113: Pennington County	2	$1,103,924.10	$1,103,924.10	$0.00																					$117,628.16	$0.00			$986,295.94	$0.00						
27115	27115: Pine County	6	$4,520,658.98	$1,588,299.98	$2,932,359.00					$187,051.54	$0.00	$442,309.43	$2,932,359.00									$298,693.28	$0.00							$11,630.25	$0.00	$44,087.37	$0.00	$604,528.11	$0.00		
27117	27117: Pipestone County	5	$1,530,906.87	$1,530,906.87	$0.00					$87,876.99	$0.00							$487,192.01	$0.00			$127,946.76	$0.00			$685,389.94	$0.00							$142,501.17	$0.00		
27119	27119: Polk County	5	$4,110,587.83	$4,110,587.83	$0.00	$948,481.09	$0.00															$82,522.40	$0.00			$1,725,818.77	$0.00			$1,260,076.29	$0.00	$93,689.28	$0.00				
27121	27121: Pope County	4	$654,116.79	$654,116.79	$0.00											$146,391.05	$0.00											$383,022.56	$0.00					$10,629.01	$0.00	$114,074.17	$0.00		
27123	27123: Ramsey County	4	$6,175,189.61	$5,800,189.61	$375,000.00	$1,462,750.54	$0.00											$2,151,344.28	$0.00			$6,659.45	$0.00			$2,179,435.34	$375,000.00										
27125	27125: Red Lake County	3	$376,628.84	$376,628.84	$0.00	$57,907.62	$0.00																			$55,786.72	$0.00			$262,934.50	$0.00						
27127	27127: Redwood County	7	$12,615,801.67	$12,140,402.57	$475,399.10	$334,293.88	$0.00			$886,956.84	$0.00							$522,092.20	$0.00			$2,921,991.79	$0.00			$7,452,340.86	$475,399.10	$22,727.00	$0.00							$0.00	$0.00		
27129	27129: Renville County	9	$5,999,060.72	$5,974,447.72	$24,613.00	$583,653.75	$0.00			$1,358,979.45	$24,613.00							$745,004.60	$0.00			$500,106.14	$0.00			$1,548,893.59	$0.00	$929,014.34	$0.00					$73,794.11	$0.00	$180,303.62	$0.00	$54,698.12	$0.00
27131	27131: Rice County	4	$2,190,062.17	$2,190,062.17	$0.00							$431,709.28	$0.00					$1,054,472.48	$0.00	$419,727.75	$0.00															$284,152.66	$0.00
27133	27133: Rock County	6	$3,293,263.52	$3,293,263.52	$0.00									$360,787.80	$0.00			$1,768,104.22	$0.00			$394,233.86	$0.00			$229,755.42	$0.00					$0.00	$0.00			$540,382.22	$0.00
27135	27135: Roseau County	6	$5,510,855.13	$5,493,125.13	$17,730.00	$859,632.15	$17,730.00									$73,930.79	$0.00	$165,846.38	$0.00							$525,885.56	$0.00			$3,608,559.99	$0.00			$259,270.26	$0.00		
27137	27137: St. Louis County	6	$32,245,083.38	$30,403,616.13	$1,841,467.25							$16,186,062.65	$538,599.00									$563,929.56	$0.00	$9,293,061.70	$1,104,469.77					$1,410,627.18	$198,398.48			$1,988,446.28	$0.00	$961,488.76	$0.00
27139	27139: Scott County	3	$5,018,200.70	$5,018,200.70	$0.00	$273,440.56	$0.00											$4,268,287.46	$0.00							$476,472.68	$0.00										
27141	27141: Sherburne County	6	$6,565,732.87	$6,565,732.87	$0.00					$432,254.73	$0.00			$341,947.53	$0.00	$407,836.33	$0.00									$3,373,119.69	$0.00	$1,758,361.77	$0.00			$252,212.82	$0.00				
27143	27143: Sibley County	7	$4,250,455.90	$4,230,112.90	$20,343.00	$420,476.51	$0.00					$123,775.75	$20,343.00			$93,619.87	$0.00	$2,303,861.70	$0.00			$190,281.69	$0.00			$988,862.64	$0.00									$109,234.74	$0.00
27145	27145: Stearns County	3	$2,106,516.01	$1,888,360.01	$218,156.00					$396,344.85	$0.00					$628,820.35	$0.00											$863,194.81	$218,156.00								
27147	27147: Steele County	4	$1,743,827.64	$1,743,827.64	$0.00													$395,596.59	$0.00	$364,967.48	$0.00					$852,944.10	$0.00							$130,319.47	$0.00		
27149	27149: Stevens County	6	$1,201,468.59	$1,201,468.59	$0.00	$136,954.25	$0.00									$143,329.68	$0.00									$324,042.13	$0.00	$340,189.47	$0.00			$45,191.00	$0.00	$211,762.06	$0.00		
27151	27151: Swift County	6	$2,455,064.70	$2,403,759.45	$51,305.25	$82,236.17	$0.00									$630,452.73	$0.00									$705,722.55	$0.00	$634,689.80	$0.00			$0.00	$51,305.25	$350,658.20	$0.00		
27153	27153: Todd County	3	$1,056,277.50	$1,056,277.50	$0.00													$337,704.37	$0.00									$195,825.15	$0.00			$522,747.98	$0.00				
27155	27155: Traverse County	6	$2,506,386.46	$2,492,814.46	$13,572.00	$563,761.25	$13,572.00									$79,222.30	$0.00									$732,267.33	$0.00	$0.00	$0.00			$95,762.71	$0.00	$1,021,800.87	$0.00		
27157	27157: Wabasha County	3	$874,403.68	$860,473.18	$13,930.50																					$475,432.19	$13,930.50							$111,845.26	$0.00	$273,195.73	$0.00
27159	27159: Wadena County	4	$184,894.55	$167,774.55	$17,120.00	$8,463.95	$17,120.00											$106,017.15	$0.00									$31,547.66	$0.00			$21,745.79	$0.00				
27161	27161: Waseca County	4	$2,365,106.22	$2,365,106.22	$0.00													$267,418.66	$0.00	$1,251,507.89	$0.00					$713,213.71	$0.00							$132,965.96	$0.00		
27163	27163: Washington County	2	$1,366,694.86	$1,272,862.09	$93,832.77	$365,891.33	$0.00																			$906,970.76	$93,832.77										
27165	27165: Watonwan County	6	$2,486,699.42	$2,486,699.42	$0.00									$329,726.29	$0.00			$53,440.98	$0.00			$357,839.13	$0.00			$1,451,899.31	$0.00	$20,579.34	$0.00					$273,214.37	$0.00		
27167	27167: Wilkin County	5	$829,892.16	$829,892.16	$0.00	$231,425.90	$0.00									$35,742.95	$0.00									$281,269.77	$0.00	$9,963.64	$0.00					$271,489.90	$0.00		
27169	27169: Winona County	2	$650,101.91	$650,101.91	$0.00																					$585,835.65	$0.00							$64,266.26	$0.00		
27171	27171: Wright County	3	$646,148.05	$646,148.05	$0.00	$199,480.83	$0.00									$106,904.02	$0.00	$339,763.20	$0.00																		
27173	27173: Yellow Medicine County	6	$4,108,767.58	$4,108,767.58	$0.00	$225,843.02	$0.00			$0.00	$0.00							$451,437.57	$0.00							$2,485,966.76	$0.00	$891,053.61	$0.00			$54,466.62	$0.00				
Total	Total	16	############	$325,710,591.48	$22,814,903.83	$20,249,390.40	$213,846.00	$3,548,610.43	$83,251.00	$11,095,538.43	$152,558.00	$41,354,847.24	$3,987,918.00	$11,108,020.88	$100,979.00	$13,712,894.68	$123,284.23	$39,545,714.11	$4,370,101.16	$7,109,979.59	$353,487.50	$25,171,952.35	$634,440.06	$9,849,973.83	$1,216,188.42	$80,139,968.50	$8,027,636.85	$13,123,280.76	$533,393.19	$21,271,906.90	$2,647,088.84	$7,227,889.88	$185,538.44	$10,560,393.44	$185,193.14	$10,640,230.06	$0.00

APPENDIX

MAPPING THE IMPACT

DATA VISUALIZATION TOOLS

It is evident the U.S. is already paying a steep price for this challenge. Rebuild by Design partnered with APTIM and iParametrics to create the following visual tools to demonstrate how climate events have affected each state. The set of six maps depicts which areas have been hit the hardest by recent climate events, where recovery funds are focused, where those individuals with high social vulnerabilities live, and which areas have the least energy reliability.

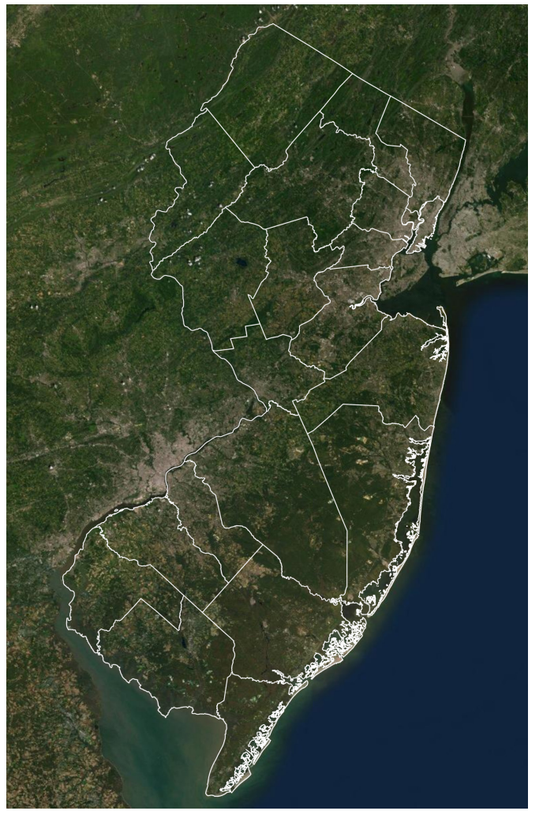
The U.S. needs to change the way it is making funding decisions. Where we make priority investments is equally important to what we invest in. Returns on investments (ROI) in the form of social benefits to communities needs to be part of grant evaluations. The U.S. need to utilize new decision-making frameworks that are forward-looking. The final map in the set includes an example of a new decision-making framework that takes into account current vulnerabilities and future climate risks. This is one example of how physical and social vulnerability indicators could inform where investments in adaptation infrastructure can yield high returns in social benefits to the most impacted communities. Our team recognizes, however, that there are other decision-making frameworks to explore, and further research is needed to understand which indicators should be included in any state-specific model. Given the ever-present constraints on funding availability, the intent of presenting these maps together is to prompt investments that address multiple known vulnerabilities simultaneously within projects, furthering comprehensive climate adaptation planning.

The following data are designed as a tool to help communities understand their risks to make better-informed choices with higher returns on investment, though each state should determine their own framework for investment.

There are always many ways to present these data. For the purposes of this report, we chose to analyze the years 2011-2024. The following six maps and two tables are presented in this format with the following considerations and limitations:

GEOGRAPHIC MAP

The map provides topographic and geographic context for each state and its surrounding areas, indicating whether the state encompasses coastal, riverine, lake, alpine, or desert land.

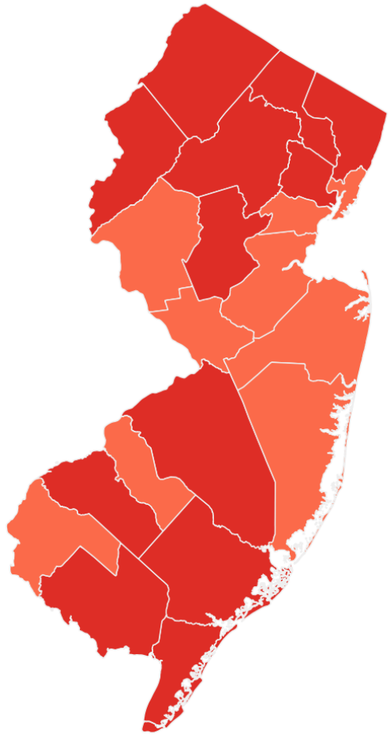


GEOGRAPHIC MAP. SOURCE: ESRI
WORLD IMAGERY BASEMAP

DISASTER DECLARATIONS (RED)

This map shows federally declared climate disasters by county from 2011-2024 – providing a snapshot of the magnitude of climate disasters across the country in recent history. This report only identifies federally declared disasters, as there is no entity that collects and publishes state disaster declarations. It should be noted that the declarations shown in this report do not reflect every climate event that has occurred between 2011-2024; the report instead only shows those which have met the cost threshold for a federal disaster declaration. Therefore, the findings overall underestimate the number of occurrences and the suffering that some communities have experienced.

According to the Stafford Act, as amended in May 2021, a "major disaster" includes "any natural catastrophe (including any hurricane, tornado, storm, high water, winddriven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under this Act to supplement the efforts and available resources of States, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby."



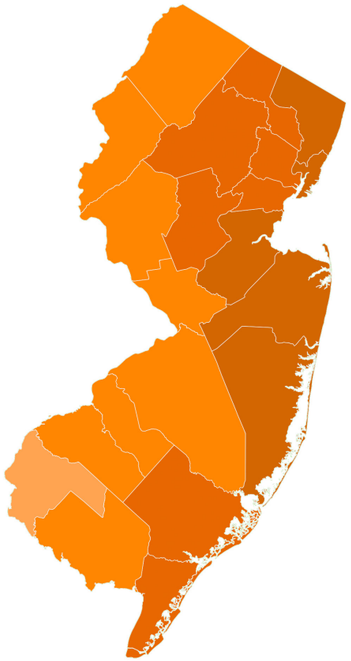
DISASTER OCCURRENCES
SOURCE: FEMA 2011-2024
MAP MADE BY REBUILD BY DESIGN

Importantly, extreme heat waves do not fit the criteria for federal disaster declarations despite being the leading cause of deaths among climate hazards. Likewise, sea level rise is not included in this definition despite the threat it poses to numerous communities, including damage to property, loss of land, and displacement.

It should be noted that while most disaster declarations are due to climate events, there are a few instances of disasters due to other natural hazards, such as earthquakes and volcanic eruptions. Though these events are not increasing in magnitude or frequency due to climate change, the severity of their impact may be connected. As climate impacts degrade household and critical infrastructure, communities may become more vulnerable to other natural hazards. Retrofitting infrastructure after these events often requires the same measures as floods, tornadoes, fires, etc., so these events were included in the report to demonstrate the need to prioritize multi hazard adaptation approaches.

FEDERAL ASSISTANCE (ORANGE)

The map shows the amount of federal dollars allocated to counties through FEMA's Public Assistance and Hazard Mitigation Grant Programs between 2011-2024 which allocates funding to individual counties and statewide. The map does not show where "statewide" allocations were spent within the state, but rather only shows county allocations. However, these statewide allocation amounts are included in the Disaster Declaration table at the end of each chapter and included in the "FEMA Total" provided next to the map. The adjacent table adds HUD's Community Development Block Grant Disaster Recovery funds – which are only available to states after a disaster – to the FEMA Total for an estimate of federal post-disaster spending in each state.



FEDERAL ASSISTANCE
SOURCE: FEMA (HA+PM) 2011-2024
MAP MADE BY REBUILD BY DESIGN

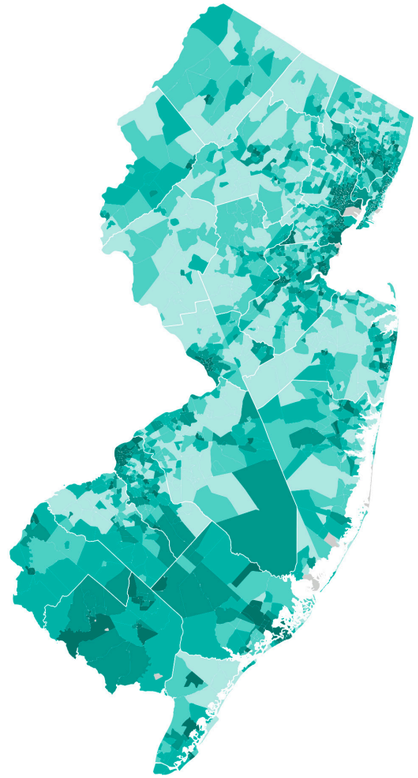
The Disaster Declaration tables provided at the end of each chapter show all federal Disaster Declarations declared between 2011-2024 and the corresponding FEMA obligations associated with those events. **However, in some instances, FEMA continues to obligate funds for years following a declaration. Some states have received funds for events that took place between 2011-2024 after 2024, so the total sum of funds associated with that event are not captured**. All FEMA funds allocated to counties between 2011-2024 are shown in the federal assistance map; however, they do not show up in the Disaster Declaration table if their corresponding event took place prior to 2011. For example, counties in the State of Illinois are still receiving funds from a 1960s storm. The funds obligated to those counties are included in the map, but that event is not included in the Disaster Declaration table at the end of the chapter.

There are additional sources of federal funding made available to governments or individuals in response to disasters, such as the U.S. Army Corp of Engineers (USACE) projects, Small Business Administration (SBA) loans, and private insurance payouts, which are not included in this report because they are harder to uniformly track and/or must be paid back. Therefore, our findings underestimate the total support available to states and individuals post-disaster.

Since disaster aid is allocated to repair physical damage to property, events such as extreme heat, which largely creates physical damage to persons and not property, rarely qualify for federal disaster recovery aid. Additionally, there is only a shallow understanding of the economic impact of social and health-related costs and environmental degradation after a disaster.

SOCIAL VULNERABILITY INDEX (GREEN)

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human well-being. Such stresses include natural or human-caused disasters or disease outbreaks. The factors that determine social vulnerability are directly tied to social determinants of health or the social, economic, and physical factors – such as race, socioeconomic status, and environmental conditions – that influence health. Socially vulnerable populations fare the worst during a disaster and often take longer to recover. The Center for Disease Control/ Agency for Toxic Substance and Disease Registry Social Vulnerability Index (CDC/ATSDR SVI) uses 1**5 U.S. census variables** to help local officials identify communities that may need support before, during, or after disasters. The map presents the SVI on a census block



SOCIAL VULNERABILITY
SOURCE: CDC/ATSDR 2022
MAP MADE BY REBUILD BY DESIGN

level, indicating where the most socially vulnerable populations within each county live. The 15 indicators are grouped into four themes:

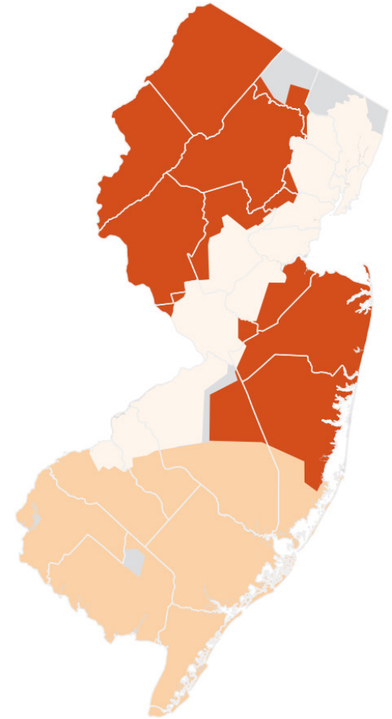
- **Socioeconomic Status** (below poverty, unemployed, income, no high school diploma);
- **Household Composition & Disability** (aged 65 or older, aged 17 or younger, older than age 5 with a disability, single-parent households);
- **Minority Status & Language** (minority, speak English "less than well"); and
- **Housing Type & Transportation** (multi-unit structures, mobile homes, crowding, no vehicle, group quarters).

Social Vulnerability Index data are not being used to make post-disaster assistance funding decisions. HUD only requires Low and Moderate Income for a portion of their funding. FEMA does not consider it in their allocations.

ENERGY RELIABILITY (BROWN)

Climate events often lead to energy disruptions for hours, days, or weeks. This map shows the annual average interruption time (in minutes) across the different energy utility providers within a state. Regions (or utility territories) in the darkest shade, on average, experience longer energy outages. These data are aggregated by utility territory, not county, meaning more than one provider can serve a county or group of counties.

Viewing the Energy Reliability Map next to the SVI Map, one can begin to infer which regions have the most socially vulnerable residents and are served by the least reliable energy providers. Energy reliability is increasingly becoming related to climate disasters and weather events. Inclusion of these maps is to support evaluation of need for concurrent flood and energy resilience projects.



ENERGY RELIABILITY
SOURCE: US ENERGY INFORMATION ADMINISTRATION 2023
MAP MADE BY REBUILD BY DESIGN

System Average Interruption Duration Index (SAIDI) is one of the performance metrics used to measure the reliability of an electric utility's service. This metric measures the total time (in minutes) an average customer experiences a non-momentary power interruption over a one-year (calendar) period.

A Major Event Day (MED) is another metric which occurs when the SAIDI exceeds a specific threshold within a given day and tends to reflect outages on the longer end of the spectrum. The data presented in this report shows a metric of SAIDI combined with MED to highlight and report electric reliability in areas (utility territories) irrespective of the root cause of the interruption. The Energy Reliability Map displays the SAIDI_W_MED metric for utility territories and highlights areas that are susceptible to electric system vulnerabilities based on reliability performances. These vulnerabilities serve as an indicator as to where investments and improvements in the distribution grid should be focused.

Electric utilities experience power interruptions due to a variety of issues. Those issues include inclement weather, vegetation management practices, utility practices, maintenance patterns, and capital investment strategy, among others, which all play a part in a utility's overall reliability performance. The U.S. Energy Information Administration produces an Annual Electric Power Industry Report which utilizes data collected from U.S. electric utilities reflecting their reliability performance against certain industry standards and performance metrics. Utilities have the flexibility to report interruptions according to duration and frequency either with major events, without major events, or both.

The annual SAIDI is the summation of the individual SAIDIs for each non-momentary interruption event over the entire year (2023):

$$\text{SAIDI} = \frac{\sum(\text{Duration of Interruption} \times \text{No. of Sustained Customer Interruptions})}{\text{Total No. of Customers Served}}$$

For utilities that report SAIDI metrics using the Institute of Electrical and Electronics Engineers (IEEE) standards, "non-momentary" interruptions are those lasting longer than five minutes. A Major Event Day (MED) is another metric which occurs when the SAIDI exceeds a specific threshold within a given day and tends to reflect outages on the longer end of the spectrum.

Utilities have certain flexibilities when reporting with these metrics. Including MED in the SAIDI metric (SAIDI_W_MED) provides an overall picture of the electric reliability experienced by customers. Excluding MED from the SAIDI metrics (SAIDI_WO_MED) tends to separate power interruption events by their durations, which provides an indicator of the source of the power interruption (i.e., distinguishes a Major Event vs. Systematic Operation interruption).

Our methodology utilizes SAIDI_W_MED as the primary measurement indicator for the electric reliability experience of the end user (customer). Our SAIDI_W_MED metric highlights the reported electric reliability in areas (utility territories, counties, and states) irrespective of the root cause of the interruption. Our metric does not exclude interruptions categorized as MEDs.

This report endeavors to highlight areas across the national electric distribution network (utility territories) that are susceptible to electric system vulnerabilities based on historical reliability of performance. We view vulnerabilities caused by major events (longer duration outages) on par with vulnerabilities caused by systematic failures (shorter duration outages) and believe they should equally drive electric grid investment and improvement decisions. These investments should also incorporate solutions aimed at mitigating systemic vulnerabilities that stem from issues like vegetation management practices, distribution automation improvements to major event vulnerabilities with root causes embedded in grid hardening, distribution generation schemes, and Automated Metering Infrastructure (AMI) upgrades aimed at minimizing customer interruption numbers and durations.