Rensselaer County Jurisdictional Annex to the

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

2025

RENSSELAER COUNTY | NY

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Rensselaer County Annex

This is the jurisdictional annex for Rensselaer County. The County Legislature passed a formal resolution to participate in updating this multi-jurisdictional hazard mitigation plan (HMP). A copy of its resolution is maintained at the County Legislative offices and at the Rensselaer County Bureau of Public Safety.

Contact Information

Table 1: Contact Information for Rensselaer County

Name	Title	Contact Information
Hagan Hill	Emergency Preparedness Coordinator	Phone: 518-906-4233 Email: hhill@rensco.com
Jay Wilson	Director of Public Safety	Email: jwilson@rensco.com
Ed Heffern	Deputy Director of Public Safety	Email: eheffern@rensco.com

Introduction

Rensselaer County has a fully integrated approach to hazard mitigation planning and program implementation. Table 2 lists the participants in the 2024 process for updating the HMP.

Table 2: Participants in the Hazard Mitigation Plan Update for Rensselaer County

Name	Title	Jurisdiction
Hagan Hill	Emergency Preparedness Coordinator	Rensselaer County
Jay Wilson	Director of Public Safety	Rensselaer County
Ed Heffern	Deputy Director of Public Safety	Rensselaer County

Jurisdiction Profile

Location and Land Area

Rensselaer County is located in the eastern part of New York State (NYS). The eastern boundary of Rensselaer County runs along the New York–Vermont and New York–Massachusetts borders. Adjacent counties include Washington County, New York (north); Bennington County, Vermont (northeast); Berkshire County, Massachusetts (east); Columbia County, New York (south); Greene County, New York (southwest); Albany County, New York (west); and Saratoga County, New York (northwest).

According to the 2020 U.S. Census, Rensselaer County has a total area of 665 square miles (1,720 km^2), of which 652.46 square miles (1,690 km^2) is land and 13 square miles (34 km^2) (1.9%) is water.[1]

Population

According to the 2022 U.S. Census Bureau's American Community Survey (ACS) Five-Year Estimates, the population of Rensselaer County is estimated to be 159,853 persons.

Demographics

Of a total area of 665 square miles, the land area is 652.46 square miles and population per square mile is 245 persons.[2]

The population of Rensselaer County includes 99.9 males per 100 females (all ages). Persons under 18 years comprise 18.8% of the population, and 18.7% are persons 65 years and over.[3] Young and old subsets of the population might have unique needs as far as care requirements and potential cognitive and/or mobility limitations before, during, and after a disaster.

The number of persons who speak a language other than English is 12,207 (8%).[4] Persons not speaking English well might have trouble understanding instructions regarding disaster preparation, response, and recovery.

Of those 25 years and older, 92.1% are high school graduates or higher, and 36.8% have received their bachelor's degree or higher.[5] Higher education can help enhance skills associated with cognition and evaluation of risk. Higher education can, therefore, foster an overall improved perception of risk,

[1] United States Census Bureau, 2025. "QuickFacts, Rensselaer County, New York", https://www.census.gov/quickfacts/fact/table/rensselaercountynewyork/PST045222
[2] Ibid.
[3] Ibid.
[4] Ibid.
[5] Ibid.

particularly where individuals might not have prior direct experience preparing for, responding to, or recovering from a particular hazard in their daily lives.

From 2018 to 2022 there were 66,238 total households and 2.99 persons per household.[6] Persons living alone sometimes have less of a direct social circle for support before, during, and after a disaster.

The Census Bureau classifies all people not living in housing units (house, apartment, mobile home, rented rooms) as living in group quarters. Group quarters may be institutional (correctional facilities, nursing homes, mental hospitals) and non-institutional (college dormitories, military barracks, group homes, missions, shelters). The Census Bureau maintains no group quarters information for this municipality. The needs of persons living in group quarters are unique, and residents are likely to have access and functional needs and unique care requirements before, during, and after a disaster.

According to 2022 ACS, the median household income was $83,109 and the percentage of persons in poverty was 11.2%. Lower income persons have limited financial resources to draw from in both pre- and post-disaster scenarios and are likely to require support as they prepare for, and recover from, hazard events.

Non-institutionalized civilians with a disability accounted for 13.1%, and people over 65 with a disability accounted for 21.8%. The total percentage of persons (civilian, non-institutionalized) without health insurance is 3.1%. Persons with disabilities have access and functional needs such as cognitive or mobility limitations that might put them at greater risk before, during, and after a hazard event.

Brief History

The area that is now Rensselaer County was inhabited by the Algonquian-speaking Mohican Indian tribe at the time of European encounter. Kiliaen van Rensselaer, a Dutch jeweler and merchant, purchased the area in 1630, as part of the Dutch colony New Netherland. The land passed from English rule (1664) to Dutch control (1673), then back to English rule (1674), until American independence in 1776. Rensselaer County was created in 1790s from an area that was originally part of the very large Albany County. In 1807 the county reorganized. The rural sections of Troy were set off as towns, and the city was incorporated. The county is named in honor of the family of Kiliaen van Rensselaer, the original Dutch owner of the land in the area. Rensselaer County is part of the Albany-Schenectady-Troy, NY Metropolitan Statistical Area.[7]

Governing Body

Rensselaer County is governed by a County Executive. The Legislature is the policy making body of Rensselaer County. The Rensselaer County Legislature is composed of 19 members who represent more

[6] United States Census Bureau, 2025. "QuickFacts, Rensselaer County, New York", https://www.census.gov/quickfacts/fact/table/rensselaercountynewyork/PST045222

[7] 2020 Rensselaer County Multi-Jurisdictional Hazard Mitigation Plan, "Rensselaer County Annex Brief History"

than 156,000 county residents. Legislators are elected at a general election on odd numbered years for a four-year term and represent six legislative districts.

Growth and Development Trends

Performing an assessment of growth and development trends is one step of a hazard mitigation plan update. This look into the future is important because development in hazard areas could put more people and property in harm's way and, in turn, could increase potential disaster-related damage and losses at a time when the mitigation plan's purpose is to reduce the potential for damage from natural disasters.

An evaluation of growth and development trends was undertaken by each participating jurisdiction as part of the development of the initial plan in 2011. As part of this plan update, the county reviewed and updated its prior feedback to reflect current conditions in the county as of early 2019.

Rensselaer County is not planning any major new development of county facilities. Some new private development is expected, particularly along the riverfronts of Troy and Rensselaer. Please see Jurisdictional Annexes for more details. New York is a home rule state, and Rensselaer County does not maintain a database of areas targeted for new development. In general, most new development is occurring out of the floodplain. Infill development continues in western portion of the county, more development of low density housing in woodlands of central-western sections. Proposed higher density in ring around cities continues. Some loss of farmland and abandoned farmland is a common trend and has been since the initial plan was prepared in 2011. Since that time, there has been somewhat of an increase in the pace of new development in rural areas. The City of Rensselaer has potential new riverfront development along the Hudson (property shovel-ready for a proposed $200 million development); the county has recommended regular coordination with the city's floodplain manager. The City of Troy is tending toward development on the ridge and they do not have a steep slope ordinance. It was also noted by county staff that the City of Troy is also developing parcels nearest to the Hudson River, in the floodplain (redevelopment of old mill properties, from commercial to residential uses). County Planning coordinates regularly with the city regarding steep slopes and floodplains. The county also noted the Mill Creek Commerce Park (out of the floodplain), limited floodplain development in the Town of Schaghticoke, and Regeneron in the Town of East Greenbush.

Hazard Identification

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool used to evaluate and prioritize risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with particular events or situations. By considering these variables, the CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes. Table 3 shows the factors for calculating the CPRI.

Table 3: Factors in the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability **What is the likelihood of the hazard occurring?**	1	Unlikely	Less than 1% probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1%–10% probability of occurrence in the next year or a recurrence interval of 11–100 years.	
	3	Likely	11%–90% probability of occurrence in the next year or a recurrence interval of 1–10 years.	
	4	Highly Likely	91%–100% probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Potential Consequences **What will be the overall impact in terms of injuries, damage, death, continuity of operations, and environmental and economic impacts?**	1	Negligible	Very few injuries, if any. Only minor property damage and minimal disruption of quality of life. Temporary shutdown of critical facilities.	30%
	2	Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	
	3	Critical	Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities more than one week.	
	4	Catastrophic	High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	
	1	Self-defined	More than 24 hours	10%

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Warning Time How long will be there be between when it is recognized the hazard is approaching and when the hazard will begin to affect the community?	2	Self-defined	12–24 hours	
	3	Self-defined	6–12 hours	
	4	Self-defined	Less than 6 hours	
Duration What is the length of time the hazard will remain active, including how long emergency operations will need to continue after the hazard event?	1	Brief	Up to 6 hours	10%
	2	Intermediate	Up to one day	
	3	Extended	Up to one week	
	4	Prolonged	More than one week	
Spatial Extent How large of an area could be impacted by a hazard event? Are impacts localized or regional?	1	Negligible	Less than 1% of area affected	20%
	2	Small	1%–25% of area affected	
	3	Moderate	25%–50% of area affected	
	4	Large	Greater than 50% of area affected	

RISK FACTOR EQUATION

RF Value = [(Probability x .30) + (Magnitude x .30) + (Onset x .10) + (Duration x .10) + (Frequency x .20)]

Table 4 presents the CPRI for Rensselaer County with respect to the different hazards the jurisdiction might experience.

Table 4: Types of Hazard Events with Calculated Priority Risk Index for Rensselaer County

Type of Hazard Event	Probability	Potential Consequences	Warning Time	Duration	Spatial Extent	Risk Factor Value
Drought	1	2	1	4	4	2.2
Earthquake	1	3	4	3	4	2.7
Extreme Temperatures	2	2	1	2	4	2.3

Type of Hazard Event	Probability	Potential Consequences	Warning Time	Duration	Spatial Extent	Risk Factor Value
Flooding	4	4	3	4	2	3.5
Hazardous Materials	3	2	4	4	1	2.5
High Winds	4	1	2	2	3	2.5
Hurricane or Tropical Storm	2	4	1	3	4	3.0
Landslide	3	2	4	4	1	2.5
Lightning	4	1	4	1	1	2.2
Terrorism	1	3	4	3	2	2.3
Tornado	1	4	4	3	2	2.6
Utility & Infrastructure Failure	3	3	4	4	2	3.0
Wildfire	1	1	4	3	2	1.7
Winter Storm	4	3	1	3	3	3.1
Other? _____	N/A	N/A	N/A	N/A	N/A	N/A

Hazard Event History

Understanding hazard event histories is crucial for effective risk management. Analyzing past events allows us to identify trends, patterns, and recurring risk factors. This knowledge enables us to better prepare for and mitigate the impact of future hazards. Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists some of the more notable events in Rensselaer County since 2011.

Table 5: Notable Hazard Events in Rensselaer County Since 2011

Type of Hazard Event	FEMA Disaster # (If Applicable)	Date(s)	Damage or Impacts	Description
Drought	None	None	None	None
Earthquake	None	04/05/2024	No reported impacts	Earthquake with epicenter in NJ, felt in some parts of the county
Extreme Temperatures Extreme Heat	None	07/21/2011	Heat indices of 100°F–104°F across the Capital District, mid-Hudson Valley.	Extreme Heat
	None	07/1/2018	Combined with dewpoints in the mid-70s, heat indices reached near 110°F in the warmest valleys.	Extreme Heat
	None	07/20/2019	Heat index values in the 100°F–110°F range in the warmest spots of the Hudson Valley.	Extreme Heat
	None	08/12/2021	Heat indices reached 95°F–104°F across parts of the Hudson River from Albany and points southward reaching 105°F–110°F.	Extreme Heat
Extreme Cold	None	01/07/2015	Warming centers opened.	Extreme Cold: Behind an arctic cold front, bitter cold air, winds chill values were as low as -40°F.
	None	02/15/2015	Warming Centers opened. Many reports of bursts water mains and pipes due to the frigid temperatures penetrating deep into the ground. This was especially true in areas where the infrastructure was older.	Extreme Cold: Some temperatures were as cold as -30°F.

Type of Hazard Event	FEMA Disaster # (If Applicable)	Date(s)	Damage or Impacts	Description
Extreme Cold (cont.)	None	02/13/2016	Several water main breaks occurred across the region. About 60 residents of an elderly care facility in Hoosick had to spend the night at a fire station as a result of a burst water pipe. In addition, the Red Cross responded to 17 emergency calls over the weekend, including for house fires in Albany, Schodack, and Gilboa. Around $3,000 of aid was given to families affected by these fires.	Extreme Cold, wind chill values reached -15°F to -45°F
	None	01/01/2018–01/05/2018	One confirmed fatality from hypothermia resulted from the stretch of cold weather as a 46-year old woman was found dead in front of her home in Glens Falls. Many warming shelters were opened across the state.	Extreme Cold: Wind chills fell as low as -15°F to -35°F in many locations across the region.
	None	01/20/2019	Cold weather prompted the closing of schools and the opening of warming shelters across the region.	Extreme Cold: Wind chills fell to -20°F to -40°F across most of the region.
	None	01/30/2019	The wind chills prompted many schools to close or delay opening, and there were several reports of water main breaks due to the cold.	Extreme Cold: Wind chills fell to -15°F to -35°F.

Type of Hazard Event	FEMA Disaster # (If Applicable)	Date(s)	Damage or Impacts	Description
Extreme Cold (cont.)	None	02/03/2023–02/04/2023	Warming centers were opened.	Artic Cold: With extreme wind chills, some squalls, temperatures ranging from -18°F in Castleton to -39°F in Grafton, and wind gusts up to 44 mph in Stephentown
Flooding (Including Flooding, Dam Failure, and Ice Jams)	None	07/01/2017	There was $300,000 in property damage. The Village of Hoosick Falls was hit particularly hard by flash flooding, with many residences experiencing basement and first-floor flooding and several roads washed out as Woods Brook overwhelmed its flood protection system and coursed through the town.	Flash Flood: A nearby rain gauge reported 1.63 inches of rain in an hour, and an additional 1.23 inches in the next two hours.
	None	07/14/2021	State of emergency declared. Many roads and bridges washed out and minor damage to many homes and businesses, with damage estimates in the millions.	Heavy Flash Flooding: 2-5 in fell in 2 hrs
	None	02/04/2022	Hit flood gauge but no reported damages, 1.4–3.8 in snow reported.	Ice Jam: Eagle Bridge, Rt-67-freezing rain prolonged period of sleet
	None	04/10/2022	Action initiated at 21 ft, flooding reached 23.44 ft	Flooding of Hudson River at Troy
	None	07/24/2023	Washed out section of Garfield Rd and private residence	Town of Stephentown had breach of William Miaski Dam

Type of Hazard Event	FEMA Disaster # (If Applicable)	Date(s)	Damage or Impacts	Description
Hazardous Materials	None	01/10/2019	Propane was able to be off-loaded, nearby residents had to be evacuated	In a train derailment in Hoosick, three 32,000 gallon propane cars were derailed.
	None	02/28/2022		Tanker roll-over, HAZMAT team notified
	None	02/08/2024	Spill of polypropylene pellets from train car into Hoosic River, spill of cooking oil into river, no major negative effects	Train derailment in Valley Falls
High Wind	None	03/02/2016 and 04/03/2016	There was $15,000 in property damage. Winds frequently gusted over 40 mph throughout the day, resulting in some downed trees, blocking roadways and downed power lines. As a result of the downed trees, several thousand power outages occurred.	Strong Wind: A few gusts reached around 50 mph, including Albany International Airport, which reached 51 mph.
	None	10/07/2020	Lots of uprooted and downed trees, road closures, downed power lines, and power outages	Microburst over Pittstown with winds up to 90 mph
	None	02/17/2022–02/18/2022	Downed tree branches and power lines, some power outages	High wind event with icing
	None	03/07/2022–03/08/2022	National grid power outages throughout county, Grafton had 10.9% of population without power, and Town of Hoosick had 20.1% without power.	High wind event

Type of Hazard Event	FEMA Disaster # (If Applicable)	Date(s)	Damage or Impacts	Description
High Wind (cont.)	None	04/03/2024–04/05/2024	Travel delays, power outages, $7,500 in property damage, school closures	High Winds: Wind gusts ranged from about 30 to 45 mph, and a few gusts ranging from 50 to 65 mph were recorded.
Hurricane or Tropical Storm	DR#4020	08/26/2011–09/05/2011	Catastrophic and flash flooding in some areas.	Hurricane Irene
	None	08/04/2020	Flooding/flash flooding in flood prone areas	Tropical Storm Isaias
Landslide	None	03/11/2024	State of emergency declaration issued; 5 power poles were damaged in the landslide; many trees were downed, causing gas leak; road was closed for 2 weeks while crews did repairs.	Landslide on Spring Avenue in City of Troy
	None			Landslide at Irish Road in Schaghticoke
Lightning	None	05/30/2016	$50,000 property damage	Lightning struck a home in Troy on Lindsey Drive in Brunswick, causing significant damage.
	None	08/21/2019	$1,000 property damage	Lightning hit a tree, resulting in downed wires trapping a person in a car in Castleton.
Terrorism	None	None	None	None
Tornado	None	08/29/2020	$45,000 in property damage, $30,000 in crop damage.	An EF1 tornado with maximum winds of 110 mph occurred in the town of Schaghticoke, NY.

Type of Hazard Event	FEMA Disaster # (If Applicable)	Date(s)	Damage or Impacts	Description
Utility & Infrastructure Failure	None	02/04/2022	N/A	16" Water Main Break in the Town of Brunswick at Rt-278 and Rt-2
	None	04/04/2022	Road closed and low water pressure until repairs occurred	Water main break East Greenbush on Brookview Rd
	None	01/11/2022–01/13/2022	Evacuation of 107 residents and pets, evacuated employees; housing provided for residents at hotel	Van Rensselaer Heights Senior Housing experienced multi-day power outage issue.
	None	01/17/2022	Over 70 residents and pets evacuated; housing provided at hotel	Renwyck Place Senior Housing sprinkler pipe burst causing extensive flooding.
	None	05/01/2023–05/09/2023	Danger to public health of residents	Sewer line break in East Greenbush on Lakeshore Dr
	None	05/22/2024	Boil water notice to residents	Water main break on Talyr Ln, affecting Eastern Troy and North Greenbush
Wildfire	None	05/30/2023–06/06/2023	N/A	State of emergency declared for Town of Nassau for threat of brush fires.
Winter Storm (Including Ice Storm and Snowstorm)	DR#4322	03/14/2017–03/15/2017	Numerous power outages and transportation delays	Blizzard conditions and high winds brought considerable blowing and drifting of snow.
	None	12/16/2020–12/17/2020	Downed trees and power lines from weight of snow	Snowfall in Rensselaer County ranging from 17.3 in to 26 in
	None	12/15/2022–12/17/2022	N/A	Nor'easter, snowfall ranging from 1in in Petersburgh to 12in in Grafton

Type of Hazard Event	FEMA Disaster # (If Applicable)	Date(s)	Damage or Impacts	Description
Winter Storm (cont.)	None	03/13/2023–03/15/2023	Downed trees and power lines with widespread power outages	Nor'easter: Heavy wet snow, accumulations from 12 in in North Greenbush to 31 in in Petersburgh
	None	N/A	State of emergency declared due to significant power outages throughout county. Many trees down and powerlines down, leading to many road closures throughout county.	Long period of rain, followed by freezing rain and sleet and then freezing temperatures with up to 0.5 in ice and snow accumulations ranging from 4 in to 11.5 in

According to the National Centers for Environmental Information (NCEI)[8] at the National Oceanic and Atmospheric Administration (NOAA), the notable events in Rensselaer County since 2011 include the following:

- **August 28, 2011** – Tropical Storm Irene: The remnants of Hurricane Irene brought heavy to extreme rainfall to the region, which resulted in catastrophic and flash flooding in some areas. In Rensselaer County, numerous road closures were also reported, with one bridge damaged, and 60 evacuations reported. In addition, major flooding occurred on the Hoosic River at Eagle Bridge and on the Hudson River at Troy. Numerous trees and power lines were reported down due to strong winds across Rensselaer County resulting in power outages and road closures including but not limited to the following: in Castleton-on-Hudson, Route 150 at Route 9J.

  In East Greenbush, a National Weather Service Cooperative Observer reported a measured wind gust of 41 mph. In the Town of Hoosick, a National Weather Service Cooperative Observer reported a measured wind gust of 39 mph in Buskirk. In the Town of Sand Lake, portions of Route 43 in West Sand Lake were reported closed due to flooding, including between Geiser Road and Mammouth Spring Road, and between Route 150 and Route 351. In the Village of Castleton-on-Hudson, Route 9J was closed due to flooding between Knickerbocker Road and Brickyard Road. In the Town of Grafton, Route 2 was closed across Rensselaer County due to numerous reports of flooding and some washouts. The Poesten Kill and Quacken Kill run along and cross Route 2.

  In Troy, a mudslide occurred on Route 2 (Brunswick Road) at Route 66 (Pawling Avenue), causing a house to collapse; two other houses were knocked from their foundations by about eight feet, and an automobile shop was engulfed in mud and pushed to the road from the rear of the lot. A home was destroyed in Poestenkill on Franklin Street by flood waters from the Poesten Kill. Route 7 across Rensselaer County was closed due to numerous reports of flooding. Major flooding occurred on the Hoosic River.

  The Eagle Bridge river gauge located on the right bank 0.5 miles upstream from Case Brook, 1.2 miles downstream from Walloomsac River, and 1.2 miles southeast of Eagle Bridge, exceeded its 11 foot flood stage at 1:31 p.m. EST August 28, its 13 foot moderate flood stage at 3:43 p.m., and its 16 foot major flood stage at 6:31 p.m. It crested at 19.24 feet at 12:30 a.m. August 29 and dropped below flood stage at 2:29 p.m. August 29.

  Route 103 in Buskirk was reported flooded approximately one mile south of Route 67. Route 136, Whiteview Road, in Wynantskill was closed at Brookside Avenue due to flooding. Route 22 in Petersburgh was closed due to flooding and a washout between Smith Road and Church Hollow Road. Portions of Route 20 were reported closed due to flooding, including at Route 9 in the Town of Schodack, and between Lords Hill Road and Coldwater Tavern Road in Nassau. Wynantskill Creek was reported flowing out of its banks with water on Thais Road at the intersection of Springer Road. Water

[8] National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI). 01/01/2011–09/30/2024. "Rensselaer County, New York." https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=ALL&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2011&endDate_mm=09&endDate_dd=30&endDate_yyyy=2024&county=RENSSELAER%3A83&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=36%2CNEW+YORK.

from the Poesten Kill destroyed a home on Franklin Street in Poestenkill. Route 66 in Wynantskill was reported closed due to flooding.

The Troy River gauge located about 1 mile north of Route 7 exceeded its 21.5 foot flood stage 5:21 p.m. EST August 28, its 24 foot moderate flood stage at 2:06 a.m. August 29, and its 27 foot major flood stage at 2:30 p.m. It crested at 27.05 feet at 3:15 p.m. and dropped below its flood stage 12:37 p.m. August 30.

The Albany river gauge located on right bank 0.1 miles upstream from bridge on U.S. Highways 9 and 20 in Albany exceeded its 11 foot flood stage at 11:12 p.m. EST August 28, its 13 foot moderate flood stage at 6:50 a.m. August 29, and its 15 foot major flood stage at 3:26 p.m. It crested at 15.40 feet at 6:15 p.m. August 29 and dropped below flood stage at 6:44 a.m. August 30.

The Rensselaer County Emergency Management Office requested voluntary evacuations for parts of the City of Troy due to flooding from the Hudson River for the neighborhoods between Ferry Street (Route 2) and the Menands Bridge (Route 378) from the Hudson River east to Fourth Street (Route 4) in South Troy and the area between 112th Street and 126th Street from the Hudson River to 5th Avenue in Lansingburgh (North Troy). Numerous homes and businesses were flooded in downtown Troy including Dinosaur Bar-B-Que. The Dunn Memorial Bridge eastbound ramp to Routes 9 and 20 was closed due to flooding from 10:45 a.m. August 29 to midday on August 30.

- **October 29–30, 2012** – Hurricane Sandy: Rainfall in Rensselaer County was not excessively heavy and did not cause any flooding because of dry antecedent conditions. Wind gusts of 40 to 60 mph were common from the afternoon of October 29 until the early morning hours of October 30. Wind gusts of 50 mph were recorded at the National Weather Service Forecast Office in nearby Albany. Trees and wires were reported down due to high winds in Berlin. In addition, the powerful storm caused a storm surge of water that moved up the Hudson River from the New York City area. In Rensselaer County, flooding occurred along the Hudson River causing damage to homes and businesses located near the river. Brickyard Road in Castleton-on-Hudson was reported to be under water due to tidal flooding along the Hudson River.
- **January 7–8, 2015** – Extreme Cold: Behind an arctic cold front, bitter cold air moved into the region for the night of Wednesday, January 7. Overnight lows were below freezing in most areas, with temperatures as Low as -10°F to -30°F over the Adirondacks and the Lake George and Saratoga Region. With strong northwesterly winds in place, this allowed for winds chill values to be as low as -40°F during the late night hours into the morning hours on Thursday, January 8. Due to the dangerously cold temperatures, many towns and cities opened shelters and warming stations for residents who needed a place to stay overnight. Many school districts also delayed the start of school due to the extremely cold temperatures and low wind chill values. Although temperatures remained frigid through the day, winds became light, allowing for wind chill values to improve by the late morning hours on Thursday, January 8.
- **March 14–16, 2017** – Severe Winter Storm and Blizzard: A very significant coastal snowstorm impacted the region March 14 through 16, featuring extremely heavy snowfall and blizzard conditions. The bulk of the snowstorm occurred during the day on Tuesday, March 14. This snowstorm was regarded as the largest snowstorm to impact upstate New York since the Valentine's

Day 2007 Snowstorm/Blizzard. Most areas saw 15–25 inches, with some western parts of the area picking up an amazing 30–42 inches of snowfall. The snow fell at 1 to 4 inches per hour for much of the day. A particularly heavy band of snow rotated northward across the region during the late morning into the early afternoon and stalled out over portions of the Mohawk Valley, resulting in an incredible report of 11.5 inches in two hours in Herkimer County.

There was a widespread extreme public impact, with many roads severely impacted and schools closed for two days. A state of emergency was issued for all New York counties, and tractor-trailers were banned on most area interstates. Numerous counties issued travel bans on county roads. Much of the train service across the region was cancelled, and all flights were grounded at Albany International Airport.

The weight of the snow resulted in two barn collapses in Schoharie County, one of which was a 20,000 square-foot structure housing 150 cows. According to media reports, total statewide government costs for response and recovery from the storm were $31.4 million, allowing the state to qualify for a federal disaster declaration.

In addition to the snowfall, gusty winds up to 45 mph resulted in near-zero visibility and blizzard conditions across the Mid-Hudson Valley, Catskills, Capital District, Taconics, and Lake George-Saratoga Region. The winds brought considerable blowing and drifting of snow along with numerous power outages.

Although the most severe impacts from the storm occurred on March 14, periods of light snow and blowing snow continued to affect the region through the early morning hours of March 16.

- **June 30–July 1, 2017** – Severe Storms and Flooding: Numerous strong to severe thunderstorms, especially across the Mohawk Valley, Saratoga Region, and Capital Region. The severe storms produced two EF-1 tornadoes in Fulton and Herkimer counties and knocked down numerous trees and power lines across the region. There was one report of large hail in Saratoga County. At least 1,500 people lost power as a result of the thunderstorms. In Schodack, four people suffered minor injuries after a firework display tent collapsed at the Pilot truck stop on Route 9 in Schodack due to severe thunderstorm winds. In the Town of Nassau Route 20 was closed between Bliss School House Road and Route 66 due to downed trees and wires as a result of thunderstorm winds. A tree and power lines were downed as a result of thunderstorm winds in the town of Stephentown.

  A creek flooded over Cooksboro Road in Raymertown. One lane of Route 7 was washed out in two places between the Hoosic River and Potter Hill. The shoulder was washed out in places as well. This resulted in a 20-mile road closure from Brunswick to the Vermont state line. Portions of County Routes 95 and 103 were also closed in the Town of Hoosick. Tamarac Road was closed with water running over the road.

  Severe flooding occurred in the Village of Hoosick Falls as heavy rain resulted in a partial collapse of the Woods Brook flood protection system. A nearby rain gauge reported 1.63 inches of rain in an hour, and an additional 1.23 inches in the next two hours. The brook spilled out of its banks and coursed through the village, causing water and debris to rush into yards and residences. Numerous houses reported basement flooding, with a few reporting flooding on the first floor, leading to evacuations.

Three sinkholes developed, one the size of two tractor trailers. Several roads remained closed well into the following day, and flood waters washed out a portion of the train tracks that pass through the village. A local state of emergency was declared. The Village of Hoosick Falls was hit particularly hard by flash flooding, with many residences experiencing basement and first-floor flooding and several roads washed out as Woods Brook overwhelmed its flood protection system and coursed through the town. A state of emergency was declared for the village, where an estimated $300,000 in damage occurred.

Personnel respond in Schodack after a tent collapse due to a storm on June 30, 2017 (Martin Miller / Special to the Times Union)

A view of Church Street a resident posted to Facebook during torrential rain in the Village of Hoosick Falls Saturday, July 1, 2017.

Figure 1: Severe Storms and Flooding on June 30–July 1, 2017

- **January 20, 2019** – Severe Snowstorm: The largest snowstorm to date in the 2018–19 winter occurred on January 19 and 20 across eastern New York. Low pressure formed over the Lower Mississippi Valley and lifted northeast across the Tennessee Valley during the night of January 19 before moving along the Mason-Dixon line on January 20. Strong rising motion occurred as southerly winds aloft transported moist air northward, which was lifted over the cold airmass in place over eastern New York.

  Snowfall began during the afternoon of January 19, continuing heavy at times into the evening and overnight hours before ending during the morning of January 20. The strong southerly flow brought above-freezing air aloft into the region, causing the snow to turn to sleet as far north as the Capital District and northern Catskills for a time before turning back to snow. Further south, the air aloft was warm enough to turn the precipitation to freezing rain with ice accretion of one to three tenths of an inch over portions of the southeast Catskills, Mid-Hudson Valley, and southern Taconics.

Snowfall totals were heaviest from the central Mohawk Valley into the southern Adirondacks and Lake George-Saratoga region where 1.5 to 2 foot totals were common. Three to six inches of snow and sleet along with some ice occurred over the Mid-Hudson Valley, while the remainder of the region saw between 6 and 18 inches.

The snowfall resulted in the cancellation of many weekend activities along with all flights from Albany International Airport scheduled to leave the morning and afternoon of January 20. The governor of New York banned buses and tractor trailers from nearly the entire New York State Thruway and most interstate highways during the storm. States of emergency were declared for Albany and Saratoga Counties. Also, around 200 customers lost power due to the freezing rain in Ulster and Dutchess Counties. Frigid temperatures followed the snow for Monday and Tuesday, January 21–22, with wind chills falling to -20°F to -40°F across most of the region. The cold weather prompted the closing of schools and the opening of warming shelters across the region.

- **January 25, 2019** – Ice Jams: Ice jams on the Hudson River caused eight boats to become dislodged from their moorings on the Hudson River in Rensselaer County as early as 1 a.m. One unoccupied vessel, the Captain JP III, became lodged underneath the Amtrak train crossing Livingston Avenue Bridge in Rensselaer. A small fleet of tugboats worked to dislodge and then dock all vessels. No damages were reported to area bridges, though several bridges were forced to close during morning commuting hours because of the loose vessels.
- **August 29, 2020** – Tornado: An EF1 tornado with maximum winds of 110 mph occurred in the town of Schaghticoke, NY, during the evening of August 29, 2020. Significant damage was done to the roof of a house on Verbeck Avenue, and a shed in the backyard of the house was destroyed. Several large trees were uprooted near the house. Farther to the southeast, several trees were downed near a cemetery near the intersection of Routes 40 and 67. Structural damage was also done to the roof of Hoosic Valley Junior Senior High School and elementary school in this area. The tornado continued into Valley Falls, where sporadic tree damage was noted.
- **July 14, 2021** – Flash Flood: Slow-moving thunderstorms moved over Rensselaer County during the afternoon, resulting in 2 to 5 inches of rainfall over two to three hours over central and southern portions of the county. The runoff from the rainfall washed out or destroyed numerous roads and bridges, some of which would take weeks to months to reconstruct. Damages to roads and bridges totaled around $3 million, according to county officials.

  The Rensselaer County Executive declared a state of emergency and urged no unnecessary travel after the storms. Governor Hochul requested a Physical Disaster Declaration from the Small Business Administration, citing major damage to 18 homes and 9 businesses totaling $1.895 million, and minor damage to 281 homes and 14 businesses totaling $2.3 million. Some of the storms also produced wind damage with reports of trees and wires down. Route 278 and Route 7 were flooded with 2–3 feet of moving water at the intersection. There were reports that Route 278 was impassable and closed. There were several reports of roads flooded or washed out in the Brunswick area, including Moonlawn Road. There were several reports of roads flooded or washed out in the Eagle Mills area, including Garfield Road, Creek Road, and Dater Hill Road. There were several reports of roads flooded and washed out in the Poestenkill area, including Plank Road, Snyders Corner Road, and Blue Factory Road. Several inches of moving water was reported flowing over Route 43 in several locations

between West Sand Lake and Averill Park. Route 66 was washed out north of Averill Park. Several other roads were closed or washed out in the Town of Sand Lake, including Holcomb Road, Burden Lake Road, Old Best Road, and Taborton Road. There were reports of water reaching homes and flooding basements along Berkshire Drive and Evergreen Way. One lane of Columbia Turnpike was reported closed. In addition, rocks and debris were washed onto some roads in the East Greenbush area. There were several reports of roads flooded or washed out in the town of Schodack. Several roads were closed or washed out due to flooding in the eastern portion of Sand Lake, including Holcomb Road, North Nassau Road, and Burden Lake Road. A parking lot was washed out at a restaurant on Crooked Lake. There was a significant amount of flood damage to the northern portion of the Town of Nassau. Several roads were closed, including Burden Lake Road and Nassau-Averill Park Road. Route 66 was closed due to debris over the road at Pike's Pond.

- **April 3–5, 2024** – High Winds, Heavy Snow Storm: A potent Miller Type B storm system (weakening low pressure to the west over the Great Lakes and strengthening low off the east coast) brought locally strong to damaging wind gusts, rain, and heavy, wet snow to eastern New York. The greatest snowfall totals accumulated at the higher terrain regions of the Southern Adirondacks and Helderbergs where totals ranged from 7 to 12 inches with locally higher totals of 13 to 17 inches in the Southern Adirondacks. Elsewhere, totals ranging from less than 1 inch to 6 inches were common with the Mid-Hudson Valley generally accumulating the least amount of snow.

  This storm also produced strong to locally damaging wind gusts across eastern New York. While most recorded gusts generally ranged from about 30 to 45 mph, a few gusts ranging from 50 to 65 mph were recorded. An isolated, maximum gust of 85 mph was recorded in Rensselaer County which led to the significant damage to a barn on a farm in the town of Petersburgh. The timing of some of the greatest snowfall rates intersecting the morning commute on April 4 made for hazardous conditions in many areas, leading to traffic delays.

  Additionally, the weight of heavy, wet snow paired with strong to locally damaging winds lead to numerous disruptions to traffic patterns and power outages from downed wires and trees. Key impacts included travel delays, power outages, property damage, school closures.

National Flood Insurance Program (NFIP) Summary

The National Flood Insurance Program (NFIP) is a Federal Emergency Management Agency (FEMA) program that provides flood insurance to millions of policyholders across the country. The following information is provided to meet federal standards. Rensselaer County answered the NFIP questions in Table 6 to the best of its ability.

Table 6: Responses on Floodplain Management from Rensselaer County

Question	Response
Why does the community not participate in the NFIP?	The county does not have jurisdiction over the NFIP; that is done across each municipality. The county has limited ability to help assist with this program except to help raise awareness to residents and potentially help provide some mapping from GIS, but again, GIS has very limited capabilities.
Is the community interested in joining the NFIP?	N/A

Critical Facilities Information

The following information is provided to meet standard F1. Identifying critical facilities in flood-prone areas is crucial for effective emergency planning and risk management. By understanding the potential impact of flooding on these facilities, local authorities can develop proactive strategies to mitigate risks and ensure the safety and functionality of these important assets during flood events. This information is valuable for decision-making and prioritizing resources for emergency response and preparedness efforts. Table 7 lists the critical facilities (emergency facilities, critical infrastructure and utilities, and other key facilities, as presented in Risk Assessment) that are in the floodplain in Rensselaer County.

Table 7: Critical Facilities Located in the Floodplain in Rensselaer County

Critical Facility	Type of Facility	Jurisdiction	1% Chance? Zone AE	0.2% Chance? Zone X (Shaded)	How has this facility been protected from flooding?	Feasibility of Mitigating the Flood Risk
Glenmore Road Armory	Military Base	City of Troy	No	No	Federal government office protected via federal policies	N/A
New York State Office of Children and Family Services (OCFS)	Governmental Operations	Rensselaer County	Yes	Yes	State government office protected via state policies	N/A
Rensselaer County Communication Tower-Tinley Rd	Communication Tower	City of Troy	No	No	Tower is at the top of a ridge and monitored for flooding when needed	N/A
Rensselaer County Jail/Rensselaer County Sheriff's Office	Emergency Operations Center/Dispatch Center	City of Troy	Yes	Yes	Jail is elevated so it doesn't flood.	N/A
Rensselaer County Office Buildings	Government Operations	City of Troy	No	No	Building is on hill and elevated, will not flood	N/A
Rensselaer County Probation	Government Operations	City of Troy	No	No	Building is on hill and elevated, will not flood, next to other county buildings	N/A

Critical Facility	Type of Facility	Jurisdiction	1% Chance? Zone AE	0.2% Chance? Zone X (Shaded)	How has this facility been protected from flooding?	Feasibility of Mitigating the Flood Risk
Samaritan Hospital	Hospital	City of Troy	No	No	Hospital does not have much run off or much risk. It relies on City of Troy's drainage capabilities. There has been flooding due to large deluge of water overwhelming the city's drainage capability, which backed up hospital drains. The hospital is beginning the project to divert stormwater away from the hospital.	N/A
St Peter's Health Partners	Healthcare Facility	City of Troy	No	No	Facility does not have much run off or much risk, relies on city's drainage capabilities	N/A
U.S. Army Corps of Engineers: Troy Lock and Dam	Governmental Operations	City of Troy	Yes	Yes	Federal government office protected via federal policies	N/A
U.S. Coast Guard	Military Base	City of Troy	No	No	Federal government office protected via federal policies	N/A

Jurisdiction/Public Identified Vulnerabilities

Table 8 provides crucial information on critical facilities in Rensselaer County, highlighting the county's vulnerability to identified hazards. It outlines the susceptibility of assets to damage from the identified hazards, offering valuable insights into their potential impact on these essential facilities. By understanding the risks to these assets, local authorities can develop proactive strategies to mitigate the vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and building the resilience of the community.

Table 8: Vulnerable Assets in Rensselaer County

Vulnerable Assets	What makes this group/asset vulnerable during hazards? Have there ever been issues with recovery after an event?
People (residents, workers, visiting populations, and socially vulnerable populations like seniors, individuals with disabilities, Lower-income individuals, etc.)	
No big changes since last plan update	N/A
Structures (residential, commercial, industrial, government-owned, planned capital improvement, etc.)	
Most populous areas are in Troy along Hudson River, very vulnerable to flooding.	N/A
Economic Assets (major employers, primary economic sectors, key infrastructure like telecommunications networks, etc.)	
Only big economic addition is new Amazon factory in Schodack.	N/A
Nothing much has changed besides that.	N/A
Natural, Historic, and Cultural Resources (areas of conservation, beaches, parks, critical habitats, community centers, historic places, etc.)	
None	N/A
Critical Facilities and Infrastructure (hospitals, law enforcement, water, power, transportation systems, etc.)	
County Emergency Operations Center (EOC)	On kind of back roads, when there are big storms with many trees down makes it difficult for responders to get to EOC.
Community Activities (major local events, such as festivals, or economic events, like farming or fishing)	
Schaghticoke Fair	Severe weather such as the increasing thunderstorms during time of the fair would negatively impact the economy of the county.

Vulnerable Assets	What makes this group/asset vulnerable during hazards? Have there ever been issues with recovery after an event?
Troy Farmers Market	Every Saturday in the summer there is an outdoor farmer's market on River Street. This area is very likely to flood, which would be an economic loss.
Are there any other assets that you can think to include?	
None	N/A

Additional Public Involvement

As part of this 2025 plan update, Rensselaer County undertook various activities to (a) alert the public and other stakeholders to the fact that the HMP Planning Committee was developing the update and (b) provide the public and other stakeholders with a forum to ask questions and submit comments and suggestions on the process. Table 9 presents the outreach activities undertaken by Rensselaer County for the 2025 plan update.

Table 9: Outreach Activities Undertaken by Rensselaer County

Activity Date	Type of Activity	Activity Details	Department and/or Staff Member
03/29/2024–07/30/2024	Public Survey	Social Media	Rensselaer County

Capabilities Assessment

Local mitigation capabilities are essential for reducing the impact of hazards on communities. Local authorities can effectively mitigate hazards by leveraging existing authorities, policies, programs, and resources. These capabilities encompass a range of strategies, such as land use planning, building codes and enforcement, public education and outreach, infrastructure protection, and natural resource protection. Through collaboration with various stakeholders, including emergency management agencies, public works departments, and environmental organizations, local communities can implement comprehensive mitigation efforts to minimize the impact of disasters. Table 10 through Table 13 provide the capabilities of Rensselaer County.

Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 10: Planning and Regulatory Capabilities of Rensselaer County

Regulatory Tools (Codes, Ordinances, Plans)	In Place (Y or N)	How has or could this resource support hazard mitigation?
Building code	N	Helps to withstand natural disasters like hurricanes, earthquakes, floods, and wildfires.
Zoning ordinance	N	Prevents development in high-risk areas (e.g., floodplains or wildfire zones), and thus minimizes damage from hazards.
Subdivision ordinance or regulations	N	Encourages growth in areas less flood, wildfire or landslide prone. Minimizes impacts from natural disasters. Helps protect environmental areas (e.g., floodplains and wetlands).
Special purpose ordinances (floodplain management, stormwater management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	N	Encourages growth in areas less flood, wildfire or landslide prone. Minimizes impacts from natural disasters. Helps protect environmental areas (e.g., floodplains and wetlands).
Growth management ordinances (also called "smart growth" or anti-sprawl programs)	N	Promotes development patterns that minimize natural hazard exposures (e.g., floods, wildfires). Promotes resilient design in structures and infrastructures.
Site plan review requirements	N	Minimizes damage and risk from natural hazards (e.g., flooding, high-wind zones, earthquakes) prior to future development and construction.
General, comprehensive or master plan	Y	Can discourage development in areas at higher risk for natural disasters and promote resilient design standards by incorporating hazard assessments into planning determinations, identifies critical infrastructure needing protection. Overall, minimizes potential impacts of natural disasters by proactive planning.
Capital improvements plan	Y	Helps facilitate including hazard mitigation principles into project planning.
Economic development plan	N	Incorporates hazard mitigation into planning therefore making communities less vulnerable to natural disasters and allows quicker recovery post disaster. Redirects new development away from higher risk areas, promotes increase resilience in construction planning. Increases hazard mitigation incorporation into land use plans.
Emergency response plan	Y	Overall, minimizes the impact of natural disasters, thus reducing the loss of lives and properties.

Regulatory Tools (Codes, Ordinances, Plans)	In Place (Y or N)	How has or could this resource support hazard mitigation?
Post-disaster recovery plan	Y	Reduces community's overall vulnerability to natural disasters through incorporation of strategies in ways that reduce future vulnerabilities.

Administrative and Technical

Administrative and technical capabilities include staff and their skills

Table 11: Administrative Capabilities of Rensselaer County

Staff/Personnel Resources	Available (Y or N)	How has or could this resource be used for hazard mitigation?
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Land development professionals can mitigate hazards by incorporating risk assessments, resilient infrastructure, sustainable land use planning, and environmental conservation into their designs to reduce vulnerability to natural disasters and promote community safety.
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Engineers can mitigate hazards by designing disaster-resistant buildings, infrastructure, and systems to reduce damage and enhance recovery.
Planners or engineer(s) with an understanding of natural and/or human-caused hazards	Y	Planners and engineers with knowledge of hazards can mitigate risks by designing safe land use, resilient infrastructure, and adaptive strategies to reduce the impact of natural and human-caused disasters.
Floodplain manager	N	Most of the communities participate in the National Flood Insurance Program; as such, they are required by the regulations to have an appointed floodplain manager. **The county, however, does not have jurisdiction**.
Surveyors	N	Surveyors can aid hazard mitigation by accurately mapping high-risk areas, assessing land stability, identifying flood zones, and providing critical data for designing safe infrastructure and effective disaster response plans.
Staff with education or expertise to assess the community's vulnerability to hazards	Y	Staff with expertise in assessing community vulnerability can identify at-risk areas, evaluate potential impacts of hazards, and recommend strategies for reducing risks.

Staff/Personnel Resources	Available (Y or N)	How has or could this resource be used for hazard mitigation?
Personnel skilled in GIS and/or HAZUS	Y	Personnel skilled in GIS can analyze spatial data to identify hazard-prone areas, model potential disaster impacts, and support planning for risk reduction, resource allocation, and emergency response efforts.
Scientists familiar with the hazards of the community	N	Scientists familiar with community hazards can contribute to hazard mitigation by providing expertise in risk assessment, developing mitigation strategies, enhancing public awareness, advising on policy, and supporting emergency preparedness efforts.
Emergency manager	Y	Emergency managers can be used in hazard mitigation for planning, coordinating, and being able to identify risk areas.
Grant writers	Y	Grant writers are vital to apply for grants that are available making hazard mitigation more feasible financially.
Staff with expertise or training in benefit/cost analysis	N	Staff with expertise in cost/benefit analysis can help prioritize hazard mitigation projects by evaluating the financial feasibility, potential benefits, and long-term savings of various mitigation strategies, ensuring optimal allocation of resources.

Financial

Financial capabilities are the resources to fund mitigation actions.

Table 12: Financial Capabilities of Rensselaer County

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)	How has or could this resource be used for hazard mitigation?
Community Development Block Grant (CDBG)	Yes (Planning)	Yes (Planning)
Capital improvements project funding	Yes (Budget)	Capital improvement project funding can be used for hazard mitigation by financing infrastructure upgrades to reduce the impact of natural disasters.

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)	How has or could this resource be used for hazard mitigation?
Authority to levy taxes for specific purposes	Yes	The authority to levy taxes for specific purposes can be used for hazard mitigation by generating dedicated funding to support projects like infrastructure improvements, emergency preparedness, and resilience-building efforts in high-risk areas.
Fees for water, sewer, gas, or electric service	Yes (for sewer only; gas and electric are private)	Yes (for sewer only; gas and electric are private)
Impact fees for homebuyers or developers for new developments/homes	No (county does not have jurisdiction; would fall to the municipalities)	No (county does not have jurisdiction; would fall to the municipalities)
Incur debt through general obligation bonds	Yes	The authority to incur debt through general obligation bonds can be used for hazard mitigation by raising funds to finance large-scale projects with repayment spread over time.
Incur debt through special tax and revenue bonds	Yes	The authority to incur debt through special tax and revenue bonds can be used for hazard mitigation by securing funding for targeted projects with repayment tied to specific revenue sources such as taxes or fees.
Incur debt through private activity bonds	Yes (the County Industrial Development Authority can)	The authority to incur debt through private activity bonds can be used for hazard mitigation by financing private sector involvement in projects with repayment supported by revenue generated from the project.
Withhold spending in hazard-prone areas	Yes, the county has the ability to do so; implementation depends on the political will to do so.	Withholding spending in hazard-prone areas can mitigate risks by discouraging development, promoting safer land-use decisions, and redirecting resources toward resilience-building and hazard reduction efforts.

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)	How has or could this resource be used for hazard mitigation?
State mitigation grant programs	Yes	State mitigation grant programs can be used to fund projects that reduce long-term risks, such as infrastructure improvements, community resilience initiatives, and hazard-resistant construction in vulnerable areas.
Other	Possibly Local Waterfront Revitalization Projects, but county is not eligible (home rule; municipalities have jurisdiction).	N/A

Education and Outreach

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction.

Table 13: Education and Outreach Capabilities of Rensselaer County

Education and Outreach Capability	In Place (Y/N)	Does this resource currently incorporate hazard mitigation?	Notes
Community newsletter(s)	No, not right now	N/A	None
Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs)	No, not right now	N/A	None
Public meetings/events (Please describe.)	Yes	Yes	We offer education at the county fair and different community events throughout the year.

Education and Outreach Capability	In Place (Y/N)	Does this resource currently incorporate hazard mitigation?	Notes
Emergency management listserv	No	Yes	There is not currently a listserv, but we have an app with educational materials, and it will push notifications about hazards.
Local news	No	N/A	N/A
Distributing hard copies of notices (e.g., public libraries, door-to-door outreach)	No	N/A	N/A
Insurance disclosures/outreach	No	N/A	N/A
Organizations that represent, advocate for, or interact with underserved and vulnerable communities (Please describe.)	Yes	Yes	Organizations like Unity House are a great resource that help underserved populations, especially those that are low income.
Social media (Please describe.)	Yes	Yes	We have a Facebook page where educational materials and hazard warnings will be posted to keep the community informed.
Other? (Please describe.)	None	N/A	None

Opportunities to Expand and/or Improve Capabilities

Table 16 presents opportunities for Rensselaer County to expand or improve capabilities.

Table 14: Opportunities to Expand and/or Improve the Capabilities of Rensselaer County

Capability Type	Opportunity to Expand and/or Improve
Planning and Regulations	• Legal and regulatory is low and isn't really able to be improved; NYS is a home rule state; county does not have jurisdiction in a lot of cases and the authority lies with the municipalities.

Capability Type	Opportunity to Expand and/or Improve
Administrative and Technical	• Technical capability is moderate because of a lack of staff, and people wearing multiple hats. • Capabilities could be expanded by: (1) adding more staff, and/or (2) increasing the level of coordination with the municipalities and the state for training, projects, etc. • There needs to be more coordination between staff, and there is lack of staffing in several departments such as GIS, which can make it difficult to make improvements in a timely manner.
Financial	• County's fiscal position is favorable; however, there are no line items in the budget for mitigation outside of activities that are grant-funded.
Education and Outreach	• At events, we educate a lot about preparedness and safety, but there should be a bigger push for education about mitigation and how that is different than preparedness. Many people don't seem to be aware of the NFIP program or about things like our app.

Mitigation Strategy

Table 15 presents details about the 2019 mitigation actions. Table 16 presents the actions in the 2025 update, and Table 17 shows the prioritization of the mitigation actions.

Table 15: Status of Actions for Rensselaer County in 2019[9,10]

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
1	NEW – Dam Inundation Mapping GIS	Dam inundation mapping is available for some of the dams, circa 2010, but the county is not aware of whether or not new maps were issued for these dams, whether initial maps were issued for the balance of dams though NYSDEC has indicated that despite the 2012 state requirement for inundation shapefiles in GIS, there is not yet a suite of files that DEC is able to share as far as being able to see	Maps in GIS are needed; paper format is outdated, not in compliance, and does not allow for efficient communication or assessment of risk. County will meet with NYSDEC and dam owners to push for receipt of dam inundation mapping in GIS.	BRIS	GIS has not been able to make progress on this effort as it requires specialized analysis. They need outside help.

[9] Projects related to Critical Facilities (CF) must protect the facility to the 500-year event or worst damage scenario, whichever is greater.

[10] GIS = Geographic Information System, NYSDEC = New York State Department of Environmental Conservation, BRIS = Bureau of Research and Information Services, BPS = Bureau of Public Safety, NYSOEM = New York State Office of Emergency Management, BRIC = Building Resilient Infrastructure and Communities, FMA = Flood Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, NYSDOT = New York State Department of Transportation

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
		current inundation mapping in GIS. This should be targeted for all high and moderate dams in the county.			
2	NEW – Construction of New County Emergency Operations Center (EOC) Outside of the Floodplain	The County Emergency Operations Center at 4000 Main Street in Troy is immediately adjacent to the Hudson River and is located within the 100-year floodplain. In addition to being the EOC, it is also a jail.	Construct a new EOC at a location outside of the floodplain and other hazard areas. As a critical facility, the new building is required to be protected to the 500-year level.	Public Safety (Coordinator and Deputy Coordinator)	New County EOC has been constructed at 25 Macha Ln, Wynantskill, NY. This was able to happen through political backing and proper funding.
3	NEW – Beaver Dam in Town of Hoosick	In the Town of Hoosick, the July 2017 Storm took out a road. The issue was a beaver dam. The state removed the beaver dam, but the town noticed that the beavers have built another dam in the same location (on private property). The town requested county support.	The NYSDEC Beaver Damage Control Techniques Manual will be used as a guide: https://www.dec.ny.gov/docs/wildlife_pdf/nuisancebeaver.pdf The county will file a report to the NYSDEC Regional Wildlife Unit to make them aware of the fact that nuisance beavers and new beaver dam exists at the same location, with potential flood damages to the road as had happened in 2017. The county will encourage the town to report the same. The county will arrange a meeting	Public Safety (Coordinator and Deputy Coordinator) supporting the Town of Hoosick	There has not been progress on this action as far as BPS is aware. Will reach out to DEC and Hoosick to see if they have made progress.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
			with local, county, and state officials to discuss the problem and identify a viable, more permanent solution for this location to avoid repeated roadway flood damages. The county will seek a permit to relocate the beavers and/or remove the beaver dam, depending on NYSDEC's determination and recommendation and legal constraints regarding property ownership versus permittee. The manual indicates that the permittee will be the person or organization that is being damaged or potentially affected. It states, "If the affected party does not own or legally control the site where the beaver dam is located, it is the permittee's responsibility to get permission to go on lands he/she does not own or legally control to carry out the permitted actions." Coordination with the property will be required, and permission to carry out any		

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
			permitted on private property, must be resolved before any actions can be taken.		
4	NEW – Town of Brunswick Beach Reservoir Dam	The Town of Brunswick Beach Reservoir Dam is an ongoing issue. DEC is requiring work at the site. Part of the dam structure is a county culvert. The town has requested county support.	Undertake any required mitigation actions (whether repair or replacement) by NYSDEC for county-owned components of the dam structure, including the problem culvert.	County Engineer (in coordination with the Town of Brunswick)	Project underway, led by Town of Brunswick engineer, LaBerge Group
5	NEW-Sand Lake Dam Inundation Areas	Sand Lake has five privately owned dams. County, town, and state roads can potentially be impacted if the dams fail.	To minimize or eliminate potential impacts on roadways, the county will (a) organize a meeting with the dams owners and local, county, and state officials to stress the importance of dam operation and maintenance according to DEC requirements; (b) stress the county and town's need for current inundation mapping – preferably in GIS, as per to DEC 2012 requirements; (c) conduct an outreach campaign for the potentially impacted areas, and (d) conduct a response dry-run training with county and local	County BPS Coordinator and Deputy Coordinator	There has been no progress on this action as far as BPS is aware.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
			officials for the potentially impacted areas. Phase 1: Meeting Phase 2: Project (outreach campaign and training)		
6	NEW-Ice Jam Mitigation on the Hudson	Ice jam flooding on the Hudson in 2019. Barges loose on the river smashed into bridge crossings.	County will arrange for a meeting/training led by DEC, for county and local officials and impacted businesses to discuss mitigation measures. The county envisions that one potential solution to explore would be alternative locations for overwintering of the boats. Other solutions may include installation of early warning/ detection upstream and/or structures to prevent ice jams on the river. Or better moorings (above base flood elevation). Phase 1 will be to meet with DEC to identify solutions, and Phase 2 will be to implement the identified measures.	BPS	There has been no progress on this action. Director of BPS asks that we remove this action as he does not see it as necessary.
7	Courtesy Review of Local Comprehensive	Local comprehensive/ master plan updates sometimes do not	Ensure that local comprehensive plans incorporate natural disaster mitigation techniques by requiring a courtesy review of	Planning, Emergency Services	This has been offered, but BPS has not had much traction with this action. No comprehensive plans have

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
	Plans (2011 RC-1)	adequately address natural hazards.	draft plans by the County Emergency Management Agency, as well as incorporating local goals identified in the Rensselaer County Multi-Jurisdictional Natural Hazard Mitigation Plan adopted by the communities.		been reviewed since the adoption of the plan update.
8	Public Outreach at Schaghticoke Fair (2011 RC-2)	Residents could benefit from additional information on hazards, risks, and hazard mitigation measures they can take on their own properties to reduce damages and improve resident safety before, during and after a hazard event.	Organize an annual event at the Schaghticoke Fair for homeowners, builders, and county and local jurisdictions that includes dissemination of information brochures about disasters and building retrofits, demonstration of "defensible space" concept and fire-resistant construction materials (for roofs and exterior finishes and inflammable coverings for openings like chimneys and attics) etc.	Emergency Services, Health, Highway, BRIS	This action is done annually at the Schaghticoke Fair. There is education for fair attendees about disaster awareness/preparedness and how to help mitigate hazards in their homes.
9	GIS Hazard Data Repository (2011 RC-5)	While the state GIS website contains a lot of information used by the county, many municipalities do not know where to go to find the data they are looking for.	Expand and disseminate GIS and other hazard information on the internet and to the local communities.	BRIS	GIS has made no progress on this action.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
10	Redundant Systems for Critical Facilities (2011 RC-6)	Critical facilities are lacking redundant systems; as a result, system outages can cause problems as far as continuity of operations of critical services provided by the county.	Phase 1: Identify candidate sites. Phase 2: Seek funding for backup electric and telecommunications systems in local government-owned critical facilities.	Emergency Services, Engineering, Planning	County-owned facilities have backup generators for electricity and telecoms. Working with Capital District Regional Planning Commission to get broadband throughout the county. Engineering: no progress made due to lack of funding and staffing.
11	Community Emergency Response Team (CERT) Support (2011 RC-7)	Many local municipalities in Rensselaer County lack the staffing resources necessary for their local CERT teams (the number of existing municipal staff members is often limited; many work part time hours and wear many hats).	Support and fund CERT.	Emergency Services	The CERT program was successfully up and running before the COVID-19 pandemic. Once the pandemic started, this effort was not prioritized. BPS is in the process of reaching back out to members to get them back on board.
12	Hazard Information Center (2011 RC-8)	Duplication of effort each time county and/or local officials conduct their own research on natural hazards	Create a Hazard Information Center—a virtual and physical library that contains all technical studies, particularly natural hazards.	Emergency Services, Planning, BRIS	There has been no progress on this action.
13	Hazard Awareness and Hazard	Residents could benefit from additional information on hazards,	Implement public awareness, education, and outreach	Health Department	Participate in various tabling opportunities giving out

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
	Mitigation Outreach (2011 RC-9)	risks, and hazard mitigation measures they can take on their own properties to reduce damages and improve resident safety before, during, and after a hazard event.	programs for all targeted hazards.		infographics and preparedness materials.
14	County GIS Parcel Data Expansion (2011 RC-10)	Not having building square footage, year built, type, foundation type, and condition is a limitation in terms of assessment of vulnerability of the built environment to natural hazards.	Expand upon the parcel data in the county's GIS to include such information as building square footage, year built, type, foundation type, and condition would allow for a more accurate assessment of vulnerability. Use information to update plan. Ensure information will be available to the public and to relevant communities and agencies. Maintain on completion.	BRIS, Tax Services, Local Assessors	GIS has made no progress on this action.
15	Hazard Event Notification (2011 RC-11)	Getting the word out about impending natural hazard events can be difficult, and lives can be at risk where people remain unaware of impending conditions. Different notification types reach different	Implement public notification of imminent and ongoing disasters and hazard events.	Emergency Services	BPS has set up a hazard event notification system through the "Prepare Rensselaer" app. This app sends push notifications with hazard related information and emergency preparedness education. Residents must have app to get these

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
		audiences (i.e., phone alerts, TV alerts, sirens, social media, radio, etc.)			notifications. We are in the process of implementing a new notification system called HyperReach, which would send hazard notifications to all phones in a certain area. Other methods used are National Weather Service notifications through radio and TV. Social media, mostly Facebook, and the Rensselaer County website is also used to make people aware of potential hazards, but people must go looking for this info to find it.
16	Hazard Management Asset Facility (2011 RC-13)	Hazard management assets are not housed at a single location; this can delay response times. Also, certain facilities where resources are presently housed are not particularly resilient to natural hazard events or designed to 500-year level of protection.	Construct specific protected facility for storage and maintenance of hazard management assets.	Emergency Services, Buildings	There has not been progress on this action.

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17	Shelters (2011 RC-14)	Approximately 14% of Rensselaer County's population is over 65. This age group tends to live on a fixed income and may not be able to afford alternate arrangements for taking shelter. In addition, approximately 12.6% of the county's population lives in poverty. Lower income persons and the elderly tend to have limited financial resources to draw from in both pre- and post-disaster scenarios and might be more likely to require temporary accommodation in public shelters for protection during or after hazard events.	Prepare locations for disaster relief shelters in communities.	Emergency Services	There are a list of buildings BPS uses as cooling centers and heating centers in case of extreme temperatures. These facilities can also be used as shelters in the event of a disaster. Not all facilities on this list might be available for use at any given moment, but we would reach out and ask whatever facilities we would need. BPS has some materials at the ready such as some water and cots, but when needed BPS would request Red Cross assistance.
18	BMPs for Floodplains (2011 RC-17)	Development pressures along waterways can sometimes overpower the public's desire to manage its floodplains in a responsible way	Continue to implement best management practices for floodplain areas.	Highway	This is ongoing.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
19	Retrofit/Reconstruct Aging Critical Facilities (2011 RC-19)	Rensselaer County's critical facilities, overall, are aging. Some were not designed to today's standards at the time they were built. These design limitations can make the county's critical facilities more vulnerable during hazard event occurrences, which can result in structure damages, injuries/fatalities, and/or issues with continuity of operations.	Develop a plan to retrofit or reconstruct old critical facilities. Phase 1: Identify candidate sites. Phase 2: Implement projects.	Engineering, Highway	This is ongoing.
20	Mitigation Videos/ Brochures (2011 RC-20)	The general public's knowledge of natural hazards, risks, and hazard mitigation measures is limited. This lack of knowledge can result in homeowners taking actions (or inactions) that increase their own risk of being impacted during an event.	Public awareness through video/brochures about simple steps homeowners can take to mitigate damage.	Emergency Services, Health, County Executive's Office, EMC, Planning	The "Prepare Rensselaer" app Emergency Preparedness informational resources can be easily accessed. There are also pamphlets available with emergency preparedness and mitigation tips. BPS tries to attend different events throughout the county to provide in person education throughout the year. Working on basic brochures to reduce stormwater flooding caused by ditch backups. The Health

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
					Department also does proper heat and generator usage education.
21	Earthquake Retrofits (2011 RC-21)	The HAZUS runs done during this plan update show countywide damages from a 2,500-year earthquake could cause upwards of $55 million in Rensselaer County and moderate impacts to critical facilities.	Examine provisions for earthquake resistant retrofits for existing structures and infrastructure, paying particular attention to unreinforced masonry structures built prior to the adoption of building codes requiring earthquake resistant design for new construction.	Engineering	No progress has been made; there has been a lack of funds and staffing.
22	Municipal Assistance, Steep Slope Regulations/ Ordinances (2011 RC-22)	Many municipalities in Rensselaer County have landslide hazard areas but no ordinances in place to regulate development on these steep slopes.	Assist communities with the adoption of hillside and steep slope development regulations.	Planning	No request for assistance has come up since last update. When a development is proposed for a possible slump area, locality is reminded of the possibility of landslides.
23	Detailed Landslide Hazard Mapping (2011 RC-23 RC-24)	While the Natural Resources Conservation Service has mapping of soil type and slope and various conditions that make a site more or less susceptible to landslides, the landslide hazard area mapping is so	Create comprehensive geological mapping of areas prone to landslides and rock slides. Locally identify and map specific areas of potential slope failure and limit future development in these areas (*perhaps using the	Planning, BRIS	Made a basic map based on soil types only. Need better topographical data to show areas based on soils and slopes. GIS has been unable to complete because it requires specialized analysis.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
		generic in terms of incidence and susceptibility that it does not provide actionable information for damage reduction.	methodology used ~year 2008 in the City of Schenectady*).		
24	McChesney Avenue Landslide Mitigation (2011 RC-25)	Active scour of slope south of McChesney Avenue Extension west of Moonlawn Drive. One house and a road are at the top of the slope.	Stabilize the slope south of McChesney Avenue Extension west of Moonlawn Drive to prevent further slope erosion.	Engineering, Highway	No progress has been made; lack of funds and staffing.
25	Building Safety Code Proponent (2011 RC-26)	Lightning is a hazard in Rensselaer County that has a history of causing about $10,000 in damages annually countywide. Critical facilities without adequate protection from lightning can be damaged and their operations can be ceased while repairs are made in the event of a lightning strike (i.e., Rensselaer County BPS Communications Trailer, lightning strike, 2011).	Encourage the adoption of building safety codes, such as National Fire Protection Association (NFPA) – 780 Standard for the Installation of Lightning Protection Systems (1997).	Building Department	This is an ongoing process.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
26	Grounded Outlets and Surge Protector Awareness (2011 RC-27)	The public lacks information on the benefits of using grounded outlets and surge protectors to prevent lightning damage.	Increase public awareness regarding the use of grounded outlets and surge protectors in homes and businesses.	Emergency Services, County Executive's Office, EMC, Planning	Education is ongoing through different events. There is a section on the Prepare Rensselaer app regarding benefits of grounded outlets and surge protectors.
27	Power and Communications System Resiliency (2011 RC-28)	Some county critical facilities and their equipment are not adequately protected from lightning.	Install specific retrofit techniques to protect electrical power and communications equipment.	Emergency Services, Engineering	This is an ongoing process, but no real progress has been made.
28	Ice Control Structures (2011 RC-30)	Ice jams are common in Rensselaer County; they can cause backwater flooding and flooding when the jams release suddenly.	Construct ice control structures such as booms, tension wires, and shaped block barriers.	Highway	No progress has been made; lack of funds and staffing.
29	Dam Safety Program Advocate (2011 RC-31)	The NYSDEC database lists 97 dams in Rensselaer County, of which 10 are classified as having "High" hazard potential and 13 are classified as having "Moderate" hazard Potential. Not all dams have Emergency Action Plans. Not all dam	Encourage participation in and compliance with national and NYSDEC/NYSOEM Dam Safety Programs.	Emergency Services, Planning	This effort has been made by reaching out to dam owners. However, there are still plans missing and poor communication from dam owners. This action should be ongoing to improve communication.

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		owners have provided the state with GIS files of inundation areas, and in turn, this limits the county's ability to adequately prepare and potentially respond.			
30	Dyken Pond Inundation Awareness (2011 RC-33)	Property owners do not realize they are living in a dam inundation area; this can affect their ability to prepare and respond.	Notify owners of property in dam break inundation areas of risks for Dyken Pond Dam.	Engineering	No progress has been made.
31	Detailed WUI Mapping (2011 RC-34)	While rough mapping has been done on a countywide scale for this plan has not been fine-tuned at a municipal level. This makes it difficult for municipalities to identify particular measures for improved preparation, response, and mitigation.	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, develop detailed mapping of wildland/urban interface areas.	Planning, BRIS	No planning activity. One issue in forest fires in rural areas is dead-end streets. Need to encourage communities to have two ways out, especially with long cul-de-sacs and dead-end roads. There has been no GIS progress on this action.
32	EOP Reviews for Wildfire (2011 RC-36)	Some local emergency operations plans (EOPs) do not include adequate wildfire components for	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, review local EOPs for	Emergency Services	This is an ongoing effort.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
		rescue, alert, warning, communications, and/or evacuations.	possible wildfire components regarding fire-rescue, alert warning communications and evacuations.		
33	Wildfire Resistance Awareness (2011 RC-37)	Some homeowners living on properties that favor wildfires are not fully aware of their risks or of the measures they can undertake to reduce these risks.	Initiate a public outreach program for homeowners for fire resistance. One issue in forest fires in rural areas is dead-end streets. Need to encourage communities to have two ways out, especially with long cul-de-sacs and dead-end roads.	Emergency Services, County Executive's Office, EMC, Planning	There has not been much movement with this action as wildfires are generally seen as a low threat to many residents of the community.
34	Wildfire Resistant Building Retrofits (2011 RC-38)	Some buildings in wildfire hazard areas do not have wildfire-resistant construction.	Retrofit buildings with fire resistant materials, especially roofing.	Engineering, Buildings	No progress has been made; there is a lack of funds and staffing.
35	Extreme Temperatures Public Information (2011 RC-42)	Cold waves and heat waves tend to damage structures in ways that can be prevented or minimized at the time of construction if proper techniques are followed, and homeowners sometimes do not realize how their actions/inaction affects the resiliency of their	Develop and distribute outreach tools for homeowners and building permit applicants on protection of structures against cold weather damage and proper maintenance of heating/cooling systems and proper use of space heaters.	County Executive's Office, EMC, Planning, Emergency Services	There has been some ongoing education for this effort.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
		structures to extreme heat and extreme cold conditions.			
36	Emergency Response and Warning (2011 RC-43)	Vulnerable populations have special needs in terms of emergency response, warning methods, evacuation requirements, and sheltering.	Review existing emergency response plans for enhancement opportunities. Work with social support agencies, homeowner associations, and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities.	Emergency Services, supported by Departments of Aging, Health, Social Services, and Veterans Affairs	The county has been making efforts to especially reach out to vulnerable populations.
37	Safe Room Information (2011 RC-44)	Most of Rensselaer County's built environment is aging and is not designed to current standards for tornado protection. Rensselaer County experiences regular tornado touchdowns.	Provide information on why and how to build a safe room.	Emergency Services, Planning	There has been no progress on this action.
38	Wind Retrofits (2011 RC-45)	Much of the county's built environment was constructed before codes and standards were in place to provide	Install hurricane clips and wind shutters on existing development, especially emergency facilities and	Engineering, Buildings	No progress has been made; there is a lack of funds and staffing.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
		protection from extreme wind events.	shelters built before existing codes were adopted to offer some degree of wind protection.		
39	Emergency Facility Level of Protection Assessment (2011 RC-46 and 2011 RC-47)	Much of the county's built environment was constructed before codes and standards were in place to provide protection from hazard events.	Phase 1: Study. Conduct a study to determine the year built and level of protection for each emergency facility. Phase 2: Project. On completion, seek funding for mitigation projects for emergency facilities not currently designed for protection from flooding, high wind, lightning, or wildfire damage.	Emergency Services, Engineering, Buildings, Planning	There has been no progress on this action. No planning activity. Of note, there have been several new buildings purchased and building overhauls.
40	Dunham Hollow Road (2011 RC-48)	Bank slide at Dunham Hollow Road	Mitigate bank slide at 103 Dunham Hollow Road.	Highway	Project has been completed.
41	Tamarac Road (2011 RC-49)	Tamarac Road flooding	Improve drainage on Tamarac Road near Camel Hill Road to reduce flooding impacts.	Highway	Project has been completed.
42	Hampton Avenue (2011 RC-50)	Flooding on Hampton Avenue	Reduce flooding problems on Hampton Avenue by installing catch basins/storm drains.	Highway	Project has been completed.
43	Dill Brook Hollow Road (2011 RC-51)	Bank slide on Dill Brook Hollow Road in the	Mitigate bank slide on Dill Brook Hollow Road in the	Highway	Project has been completed.

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		vicinity of Stillman Village Road	vicinity of Stillman Village Road.		
44	Garfield-East Nassau Road (2011 RC-52)	Flooding associated with box culvert on Garfield-East Nassau Road in the vicinity of Woodward Road	Replace box culvert on Garfield-East Nassau Road in the vicinity of Woodward Road to reduce flooding.	Highway	Some improvements have been made.
45	Schodack Landing Road at NYS-9J (2011 RC-53)	Flooding at the intersection of Schodack Landing Road and NY Route 9J	Reduce flooding by installing drainage improvements at the intersection of Schodack Landing Road and NY Route 9J.	Highway	No progress has been made; there are ownership issues with NYSDOT.
46	5392 South Stephentown Road (2011 RC-54)	Flooding at 5392 South Stephentown Road	Replace culvert at 5392 South Stephentown Road to reduce flooding.	Highway	Project currently underway.
47	River Road (2011 RC-55)	Flooding and ice jams on River Road (CR 121)	Replace 4 large 6 to 8 foot diameter culverts on River Road (CR 121) and harden end treatments to reduce flooding and ice jams.	Highway	Project currently underway.
48	New Turnpike Road (2011 RC-56)	Storm drain system at New Turnpike Road near Haughney Road is undersized and will no longer accommodate flood flows, causing flooding.	Replace storm drain system at New Turnpike Road near Haughney Road with increased capacity to reduce flooding.	Highway	No progress has been made.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
49	Hoags Corners Road (2011 RC-57)	Road settlement / landslide on Hoags Corners Road near Old Mill Pond Road	Repair road settlement on Hoags Corners Road near Old Mill Pond Road – landslide.	Highway	Project has been completed.
50	Green Hollow Road (2011 RC-58)	Road settlement / landslide on Green Hollow Road	Repair road settlement on Green Hollow Road – landslide.	Highway	No progress has been made.
51	North Lake Avenue (2011 RC-60)	Open drain system on North Lake Avenue is no longer sufficient, causing flooding.	Install storm drain system on North Lake Avenue to replace open drain system.	Highway	No progress has been made; there is a lack of funds and staffing.
52	Groveside Road (2011 RC-62)	Scour at critical bridge on Groveside Road near Sunkauissa Creek at Johnsonville Road	Repair scour-critical bridge on Groveside Road near Sunkauissa Creek at Johnsonville Road.	Highway	Project is currently underway.
53	Roof Drains at Main Garage (2011 RC-63)	Roof drains at main garage (124 Bloomingrove) don't accommodate stormwater runoff.	Repair roof drains at main garage (124 Bloomingrove Drive) to accommodate stormwater runoff.	Highway, Engineering	Project has been completed.
54	Winter Street (2011 RC-64)	Flooding on Winter Street	Install storm drain system on Winter Street - Extension to accommodate stormwater runoff and reduce flooding.	Highway	No progress has been made due to lack of staffing and funds.
55	Lape Road (2011 RC-65)	Stormwater runoff and flooding on Lape Road	Install storm drains on northern end of Lape Road to mitigate stormwater runoff.	Highway	No progress has been made due to lack of staffing and funds.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
56	Public Awareness Program (2011 RC-CL-1)	Residents could benefit from additional information on hazards, risks, and hazard mitigation measures they can take on their own properties to reduce damages and improve resident safety before, during, and after a hazard event.	Public awareness program on hazards, prevention, and mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal websites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/TV announcements at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources) (public education).	County-Led Action Items with Direct Municipal Involvement; CPG Member Town Supervisor	This is an ongoing effort.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
57	Code Review/Updates (2011 RC-CL-2)	Communities are safer and more resilient when new construction and substantial improvements take into account the latest information on hazard vulnerabilities and measures to reduce risk.	Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable (prevention).	County-Led Action Items with Direct Municipal Involvement; CPG Member Town Supervisor	This is an ongoing effort.
58	Code Enforcement Officer Training (2011 RC-CL-3)	There can be a loss of institutional knowledge with staff changes. Even when staff is the same, continual training improves local capabilities and allows officials to better regulate activities in hazard areas to protect lives and property.	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training (prevention).	County-Led Action Items with Direct Municipal Involvement; CPG Member Town Supervisor	This is an ongoing effort.
59	Courtesy Review of Draft Comprehensive Plans	A long-term vision for the community that does not take into account hazard areas	Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through	County-Led Action Items with Direct Municipal Involvement; CPG	This is an ongoing effort.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
	(2011 RC-CL-4)	can put lives and property at risk. Taking into account natural hazards and hazard mitigation measures can make the community more resilient.	a courtesy review of draft plans by the County Planning Department (prevention).	Member Town Supervisor	
60	Municipal Mitigation Workshops (2011 RC-CL-5)	When municipal staff members are not armed with information on zoning and planning issues that can arise regarding natural hazards and hazard mitigation, they may make decisions that do not foster community resiliency.	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation (prevention).	County-Led Action Items with Direct Municipal Involvement; CPG Member Town Supervisor	This is an ongoing effort.
61	Rural Firefighting Water Supply Upgrade *NEW*	During severe droughts, extremely cold winters, and in areas without water available, it is difficult to get sufficient	Construct or reconstruct fire ponds with sufficient capacity and depth to provide a good water source when other water supplies are impaired.	Rensselaer County Soil and Water (NRCS)	Some progress has been made.

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		water to a fire in a timely manner.			
62	Little Hoosick River Flood Control Project Repair & Maintenance *NEW*	Lack of repair and maintenance of flood control structures within and upstream of the Village of Berlin	Work with Town of Berlin to renew maintenance on structures, rebuild if necessary, clean material out from behind the dams as necessary (county does not have direct jurisdiction).	County BPS and County Legislature for arranging the meeting; Local municipality for project implementation	There has been no progress on this action.
63	Buskirk Covered Bridge *NEW*	Comment received during the mitigation plan update from the Buskirk Fire Chief via Town of Hoosick requests that the county look into flooding issues at the site of the bridge and possible mitigation measures that may be warranted at the bridge	County BPS and County Highway will attend a meeting with Buskirk Fire Chief and Town of Hoosick to discuss further.	County BPS will schedule the meeting; County BPS and County Highway will attend. Buskirk Fire Chief and Town of Hoosick Supervisor will be invited to attend Possible Phase 2 – study if necessary Possible Phase 3 – project if necessary.	There has been no progress on this action.

Initiative Number	Initiative Name	Description of the Problem	Description of the Solution	Project Lead/ Department and Position Title	Status Update
64	Mitigation of Repetitive Loss Properties (RLPs) *NEW*	A total of 23 National Flood Insurance Program RLPs are located across 8 municipalities in Rensselaer County.	The county will support property owners who wish to undertake flood mitigation on private property.	County BPS and Planning	This is an ongoing process. No outreach to planning has been made.

Table 16: Proposed 2025 Mitigation Actions for Rensselaer County[11]

Project #	Project Name	Action Worksheet (Yes/No)	Goal/ Objective Being Met	Hazard to Be Mitigated	Description of the Problem	Description of the Solution	Lead Agency	Related to CF?	EHP Issues	Estimated Timeline	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority
1	Lower Muitzekill Creek in Town of Schodack	No	Protect existing assets.	Landslide	Potentially work with NYSDEC to plan a study to help find cause of issue. Expected that existing concrete wall that runs perpendicular to the stream directs flow toward the embankment that supports CR 1 (Muitzekill Road) could be main issue.	Work to conduct study as needed to find root cause of embankment destabilization. Remove the existing concrete wall and stabilize the road embankment as needed.	County Highway Department	No	No	1 year	$375,000	Stabilization will help to prevent the road and surrounding land from crumbling away, which would affect emergency operations.	HMGP, BRIC, FMA	High
2	CR 111 Bridge (BIN 3303370) Over the Sunkauissia Creek in the Town of Pittstown	No	Protect existing assets.	Flooding	Periods of significant rainfall and snow melt result in the flooding of adjacent residential properties.	Remove sediment buildup directly upstream and downstream of the existing bridge.	County Highway Department	No	No	1 year	$175,000	Removing sediment would reduce costs to homeowners in adjacent properties.	HMGP, BRIC, FMA	High
3	CR 68 (Snyders Lake Road) in the Town of North Greenbush	No	Protect existing assets.	Flooding	Roadside flooding during periods of significant rainfall.	Where appropriate, install subsurface drainage systems.	County Highway Department	No	No	1 year	$250,000	Adding drainage systems would prevent long-term damages to road and help to prevent delays in emergency services when flooded.	HMGP, BRIC, FMA	High
4	CR 121 (River Road) in the Town of Schaghticoke	No	Protect existing assets.	Flooding	Roadside flooding during periods of significant rainfall.	Where appropriate, replace existing culverts with larger ones.	County Highway Department	No	No	1 year	$360,000	Replacing culverts would prevent road damage and prevents delays in emergency services.	HMGP, BRIC, FMA	High
5	Dam Inundation Mapping GIS	No	Improve capabilities.	Flooding	Dam inundation mapping is available for some of the dams, circa 2010, but the county is not aware of	Maps in GIS are needed; paper format is outdated, not in compliance, and does not allow for efficient	GIS	No	No	1 year	<$100,000	Benefits would include lessened future losses.	HMGP, BRIC, FMA	Medium

[11] BRIC = Building Resilient Infrastructure and Communities, NYSDEC = New York State Department of Environmental Conservation, FMA = Flood Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, NYSDOT = New York State Department of Transportation

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					whether or not new maps were issued for these dams, whether initial maps were issued for the balance of dams though NYSDEC has indicated that despite the 2012 state requirement for inundation shapefiles in GIS, there is not yet a suite of files that DEC is able to share as far as being able to see current inundation mapping in GIS. This should be targeted for all high and moderate dams in the county.	communication or assessment of risk. County will meet with NYSDEC and dam owners to push for receipt of dam inundation mapping in GIS.								
6	Beaver Dam in Town of Hoosick	No	Protect existing assets.	Flooding	In the Town of Hoosick, the July 2017 Storm took out a road. The issue was a beaver dam. The state removed the beaver dam, but the town noticed that the beavers have built another dam in the same location (on private property). The town requested county support.	The NYSDEC Beaver Damage Control Techniques Manual will be used as a guide: https://www.dec.ny.gov/docs/wildlife_pdf/nuisancebeaver.pdf. The county will file a report to the NYSDEC Regional Wildlife Unit to make them aware of the fact that nuisance beavers and new beaver dam exists at the same location, with potential flood damages to the road as had happened in 2017. The county will encourage the town to report the same. The county will arrange a meeting with local, county, and state officials to discuss the problem and identify a viable, more permanent solution for this location to avoid repeated roadway flood damages. The county will seek a permit to relocate the beavers and/or	Public Safety (Coordinator and Deputy Coordinator) supporting the Town of Hoosick	No	No	1 year	<$100,000	Relocation of the beavers would prevent future losses of road and nearby properties.	HMGP, BRIC, FMA	Medium

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						remove the beaver dam, depending on NYSDEC's determination/ recommendation and legal constraints regarding property ownership versus permittee. The manual indicates that the permittee will be the person or organization that is being damaged or potentially affected. It states, "If the affected party does not own or legally control the site where the beaver dam is located, it is the permittee's responsibility to get permission to go on lands he/she does not own or legally control to carry out the permitted actions." Coordination with the property will be required, and permission to carry out any permitted on private property, must be resolved before any actions can be taken.								
7	Town of Brunswick Beach Reservoir Dam	No	Protect existing assets.	Flooding	The Town of Brunswick Beach Reservoir Dam is an ongoing issue. DEC is requiring work at the site. Part of the dam structure is a county culvert. Town has requested county support.	Undertake any required mitigation actions (whether repair or replacement) by NYSDEC for county-owned components of the dam structure, including the problem culvert.	County Engineer (in coordination with the Town of Brunswick)	No	No	1 year	$100,000–$500,000	Prevent future losses for potential dam damage or dam loss.	HMGP, BRIC, FMA	Medium
8	Sand Lake Dam Inundation Areas	No	Protect existing assets.	Flooding	Sand Lake has five privately owned dams; county, town, and state roads can potentially be impacted if the dams fail.	To minimize or eliminate potential impacts on roadways, the county will: (a) organize a meeting with the dams owners and local, county, and state officials to stress the importance of dam operation and	County BPS Coordinator and Deputy Coordinator	No	No	2 years	<$100,000	Education and maintenance will help to prevent potential damages to dams.	HMGP, BRIC, FMA	Medium

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						maintenance according to DEC requirements; (b) stress the county and town's need for current inundation mapping—preferably in GIS, as per DEC 2012 requirements; (c) conduct an outreach campaign for the potentially impacted areas; and (d) conduct a response dry-run training with county and local officials for the potentially impacted areas. Phase 1: Meeting. Phase 2: Project (outreach campaign and training).								
9	Courtesy Review of Local Comprehen-sive Plans	No	Improve capabilities.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane /tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms	Local comprehensive/master plan updates sometimes do not adequately address natural hazards.	Ensure that local comprehensive plans incorporate natural disaster mitigation techniques by requiring a courtesy-review of draft plans by the County Emergency Management Agency, as well as incorporating local goals identified in the Rensselaer County Multi-Jurisdictional Natural Hazard Mitigation Plan adopted by the communities.	Planning, Emergency Services	No	No	1 year	<$100,000	Review of plans will help with efficiency/ effectiveness of prevention of disasters.	HMGP, BRIC	Medium
10	GIS Hazard Data Repository	No	Improve capabilities.	Drought, earthquake, extreme temperature, flooding, hazardous	While the state GIS website contains a lot of information used by the county, many municipalities do not know where to go to find the data they are looking for.	Expand and disseminate GIS and other hazard information on the internet and to the local communities.	GIS	No	No	1 year	<$100,000	Would help to plan mitigations for vulnerable areas	HMGP, BRIC	Medium

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				materials, high winds, hurricane/ tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms										
11	Hazard Information Center	No	Improve capabilities.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane /tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms	Duplication of effort each time county and/or local officials conduct their own research on natural hazards	Create a Hazard Information Center—a virtual and physical library that contains all technical studies, particularly natural hazards.	Emergency Services, Planning, BRIS	No	No	1–3 years	<$100,000	Would help to plan mitigations for vulnerable areas	HMGP, BRIC	Medium
12	County GIS Parcel Data Expansion	No	Improve capabilities.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane/	Not having building square footage, year built, type, foundation type, and condition is a limitation in terms of assessment of vulnerability of the built environment to natural hazards.	Expand upon the parcel data in the county's GIS to include such information as building square footage, year built, type, foundation type, and condition, would allow for a more accurate assessment of vulnerability. Use information to update	GIS, BRIS, Tax Services, Local Assessors	No	No	1 year	<$100,000	Would help to plan mitigations for vulnerable areas	HMGP, BRIC	Medium

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				tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms		plan. Ensure information will be available to the public and to relevant communities and agencies. Maintain on completion.								
13	Hazard Management Asset Facility	No	Improve capabilities.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane/ tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms	Hazard management assets are not housed at a single location; this can delay response times. Also, certain facilities where resources are presently housed are not particularly resilient to natural hazard events or designed to 500-year level of protection.	Construct specific protected facility for storage and maintenance of hazard management assets.	Emergency Services, Buildings	No	No	1–3 years	$500K–$1M	Prevent delay in emergency services and prevents potential loss of life or injury.	HMGP, BRIC	Low
14	BMPs for Floodplains	No	Promote resilient new develop-ment.	Flooding	Development pressures along waterways can sometimes overpower the public's desire to manage its floodplains in a responsible way.	Continue to implement best management practices for floodplain areas.	Highway	No	No	1–3 years	<$100,000	Less losses by promoting best management practices	HMGP, BRIC FMA	Medium
15	Retrofit/ Reconstruct Aging Critical Facilities	No	Protect existing assets.	Infrastructure	Rensselaer County's critical facilities, overall, are aging. Some were not designed to today's standards at the time they were built. These design limitations can make the	Develop a plan to retrofit/reconstruct old critical facilities. Phase 1: Identify candidate sites. Phase 2: Implement projects.	Engineering, Highway	Yes	No	1–3 years	$100,000–$500,000	By retrofitting critical facilities, it protects future operations and prevents damages and	HMGP, BRIC	Medium

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					county's critical facilities more vulnerable during hazard event occurrences, which can result in structure damages, injuries/fatalities, and/or issues with continuity of operations							delayed disaster response.		
16	Earthquake Retrofits	No	Protect existing assets.	Earthquake	The HAZUS runs done during this plan update show countywide damages from a 2,500-year earthquake could cause upwards of $55 million in Rensselaer County and moderate impacts to critical facilities.	Examine provisions for earthquake resistant retrofits for existing structures and infrastructure, paying particular attention to unreinforced masonry structures built prior to the adoption of building codes requiring earthquake resistant design for new construction.	Engineering	Yes	No	1–3 years	$100,000–$500,000	Prevents building damages and helps prevent financial losses and potential injury	HMGP, BRIC	Medium
17	Municipal Assistance, Steep Slope Regulations/ Ordinances	No	Promote resilient new develop-ment.	Landslides	Many municipalities in Rensselaer County have landslide hazard areas but no ordinances in place to regulate development on these steep slopes.	Assist communities with the adoption of hillside and steep slope development regulations.	Planning	No	No	1-3 years	<$100,000	Placing ordinances will prevent future losses from developments.	HMGP, BRIC	Medium
18	Detailed Landslide Hazard Mapping	No	Promote resilient new develop-ment.	Landslides	While the NRCS has mapping of soil type and slope and various conditions that make a site more or less susceptible to landslides, the landslide hazard area mapping is so generic in terms of incidence and susceptibility that it does not provide actionable information for damage reduction.	Create comprehensive geological mapping of areas prone to landslides and rockslides. Locally identify and map specific areas of potential slope failure and limit future development in these areas (*perhaps using the methodology used ~year 2008 in the City of Schenectady).	Planning, GIS	No	No	1–3 years	$100,000–$500,000	Prevention of potential property losses	HMGP, BRIC	
19	McChesney Avenue Landslide Mitigation	No	Protect existing assets.	Landslide	Active scour of slope south of McChesney Avenue Extension west of Moonlawn Drive. One house and a road are at the top of the slope.	Stabilize the slope south of McChesney Avenue Extension west of Moonlawn Drive to prevent further slope erosion.	Engineering, Highway	No	No	1–3 years	$100,000–$500,000	Stabilizing prevents economic losses of potential landslide and prevents damage	HMGP, BRIC	high

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												to road and houses nearby.		
20	Building Safety Code Proponent	No	Improve capabilities.	Lightning	Lightning is a hazard in Rensselaer County that has a history of causing about $10,000 in damages annually countywide. Critical facilities without adequate protection from lightning can be damaged and their operations can be ceased while repairs are made in the event of a lightning strike (i.e., Rensselaer County BPS Communications Trailer, lightning strike, 2011).	Encourage the adoption of building safety codes, such as National Fire Protection Association (NFPA) – 780 Standard for the Installation of Lightning Protection Systems (1997).	Engineering	No	No	1 year	<$100,000	Prevent economic losses from critical facility damage, but also prevent delay/stop of emergency services.	HMGP, BRIC	Medium
21	Power and Communica-tions System Resiliency	No	Protect existing assets.	Lightning	Some county critical facilities and their equipment are not adequately protected from lightning.	Install specific retrofit techniques to protect electrical power and communications equipment.	Engineering, BPS	Yes	No	1–3 years	$100,000–$500,000	Prevent economic losses from critical facility damage, but also prevent delay/stop of emergency services.	HMGP, BRIC	Medium
22	Ice Control Structures	No	Protect existing assets.	Ice Jams	Ice jams are common in Rensselaer County; they can cause backwater flooding and flooding when the jams release suddenly.	Construction of ice control structures such as booms, tension wires, and shaped block barriers.	Highway	No	No	1–3 years	$100,000–$500,000	Ice jams have potential for large financial losses due to damages control structures would reduce damages to public and private property.	HMGP, BRIC, FMA	high
23	Dam Safety Program Advocate	No	Increase public awareness.	Flooding	The NYSDEC database lists 97 dams in Rensselaer County, of which 10 are classified as having “High” hazard potential and 13 are classified as having “Moderate” hazard potential. Not all dams have	Encourage participation in and compliance with National and NYSDEC/ NYSOEM Dam Safety Programs.	BPS and Planning	No	No	1 year	<$100,000	Better prepared would benefit emergency services and municipalities by preventing delays in response	HMGP, BRIC, FMA	Medium

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					emergency action plans. Not all dam owners have provided the state with GIS files of inundation areas and in turn, this limits the county's ability to adequately prepare and potentially respond.									
24	Dyken Pond Inundation Awareness	No	Increase public awareness.	Flooding	Property owners do not realize they are living in a dam inundation area; this can affect their ability to prepare and respond.	Notify owners of property in dam break inundation areas of risks for Dyken Pond Dam.	Engineering	No	No	1 year	<$100,000	Prevent losses to property and life by increasing awareness and increasing preparedness.	HMGP, BRIC, FMA	Medium
25	Detailed WUI Mapping	No	Improve capabilities.	Wildfires	While rough mapping has been done on a county-wide scale for this plan has not been fine- tuned at a municipal level. This makes it difficult for municipalities to identify particular measures for improved preparation, response, and mitigation	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, develop detailed mapping of wildland/urban interface areas	Planning and GIS	No	No	1 year	<$100,000	Mapping will prevent damage from potential fires.	HMGP, BRIC	Low
26	EOP Reviews for Wildfire	No	Improve capabilities.	Wildfires	Some local Emergency Operations Plans (EOPs) do not include adequate wildfire components for rescue, alert, warning, communications, and /or evacuations	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, review local EOPs for possible wildfire components regarding fire-rescue, alert warning communications and evacuations.	BPS	No	No	1-3 years	<$100,000	Prevent potential loss of life and property through education and better preparedness.	HMGP, BRIC	Medium
27	Wildfire Resistance Awareness	No	Increase public awareness.	Wildfire	Some homeowners living on properties that favor wildfires are not fully aware of their risks, or measures they can undertake to reduce these risks.	Initiate a public outreach program for homeowners for fire resistance.	BPS and Planning	No	No	3–5 years	<$100,000	Prevent potential loss of life and property through education and better preparedness.	HMGP, BRIC	Medium
28	Wildfire-Resistant	No	Protect existing assets.	Wildfire	Some buildings in wildfire hazard areas do not have	Retrofit buildings with fire resistant materials, especially roofing.	Engineering	No	No	1–3 years	$100,000–$500,000	Prevent economic losses from property damage.	HMGP, BRIC	Medium

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	Building Retrofits				wildfire-resistant construction.									
29	Extreme Temperatures Public Information	No	Increase public awareness.	Extreme temperature	Cold waves and heat waves tend to damage structures in ways that can be prevented or minimized at the time of construction if proper techniques are followed, and homeowners sometimes do not realize how their actions/inaction affects the resiliency of their structures to extreme heat and extreme cold conditions.	Develop and distribute outreach tools for homeowners and building permit applicants on protection of structures against cold weather damage and proper maintenance of heating/cooling systems and proper use of space heaters.	BPS	No	No	1–3 years	<$100,000	Prevent future losses by increasing awareness.	HMGP, BRIC	Medium
30	Safe Room Information	No	Increase public awareness.	Tornado	Most of Rensselaer County's built environment is aging and is not designed to current standards for tornado protection. Rensselaer County experiences regular tornado touchdowns.	Provide information on why and how to build a safe room.	Planning and BPS	No	No	1–3 years	<$100,000	Prevent loss of life and injury from potential tornadoes.	HMGP, BRIC	Medium
31	Wind Retrofits	No	Protect existing assets.	High winds	Much of the county's built environment was constructed before codes and standards were in place to provide protection from extreme wind events.	Install hurricane clips and wind shutters on existing development, especially emergency facilities and shelters built before existing codes were adopted to offer some degree of wind protection.	Engineering	No	No	1–3 years	$100K-$500K	Prevents loss of property and prevents delay of emergency services	HMGP, BRIC	Medium
32	5392 South Stephentown Road Culvert Replacement Project	No	Protect existing assets.	Flooding	Flooding at 5392 South Stephentown Road	Replace culvert at 5392 South Stephentown Road to reduce flooding.	Highway	No	No	1 year	$100,000–$500,000	Prevent property damage and losses.	HMGP, BRIC, FMA	Medium
33	River Road Culvert Replacement Project	No	Protect existing assets.	Flooding	Flooding and ice jams on River Road (CR 121)	Replace 4 large 6-to-8-foot diameter culverts on River Road (CR 121) and harden end treatments to reduce flooding and ice jams.	Highway	No	No	1–3 years	$100,000–$500,000	Prevent property damage and losses.	HMGP, BRIC, FMA	Medium

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34	New Turnpike Road Storm Drain System Replacement	No	Protect existing assets.	Flooding	Storm drain system at New Turnpike Road near Haughney Road is undersized and will no longer accommodate flood flows, causing flooding.	Replace storm drain system at New Turnpike Road near Haughney Road with increased capacity to reduce flooding.	Highway	No	No	1–3 years	$100,000–$500,000	Prevent property damage and losses.	HMGP, BRIC, FMA	Medium
35	Green Hollow Road Settlement Project	No	Protect existing assets.	Landslide	Road settlement / landslide on Green Hollow Road	Repair road settlement on Green Hollow Road – landslide.	Highway	No	No	1 year	$100,000–$500,000	Prevent property damage and losses.	HMGP, BRIC	Medium
36	North Lake Avenue Storm Drain System Installation Project	No	Protect existing assets.	Flooding	Open drain system on North Lake Avenue is no longer sufficient, causing flooding.	Install storm drain system on North Lake Avenue to replace open drain system.	Highway	No	No	1 year	$100,000–$500,000	Prevent property damage and losses.	HMGP, BRIC, FMA	Medium
37	Groveside Road Critical Bridge Repair Project	No	Protect existing assets.	Infrastructure	Scour at critical bridge on Groveside Road near Sunkauissa Creek at Johnsonville Road	Repair scour at critical bridge on Groveside Road near Sunkauissa Creek at Johnsonville Road.	Highway	No	No	1–3 years	$100,000–$500,000	Prevent property losses and prevent delays of emergency services.	HMGP, BRIC, FMA	Medium
38	Winter Street Storm Drain System Installation Project	No	Protect existing assets.	Flooding	Flooding on Winter Street	Install storm drain system on Winter Street - Extension to accommodate stormwater runoff and reduce flooding.	Highway	No	No	1 year	$100,000–$500,000	Prevent property damage and losses.	HMGP, BRIC, FMA	Medium
39	Lape Road Stormwater System Project	No	Protect existing assets.	Flooding	Stormwater runoff and flooding on Lape Road	Install storm drains on northern end of Lape Road to mitigate stormwater runoff.	Highway	No	No	1 year	$100,000–$500,000	Prevent property damage and losses.	HMGP, BRIC, FMA	Medium
40	Hazard Mitigation and Prevention Public Awareness Program	No	Increase public awareness.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane/ tropical storms, landslide,	Residents could benefit from additional information on hazards, risks, and hazard mitigation measures they can take on their own properties to reduce damages and improve resident safety before, during and after a hazard event.	Public awareness program on hazards, prevention, and mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal websites to link up to this site, if they have not already done so); all participating jurisdictions to support preparation of a joint annual hazard	County-led action items with Direct Municipal Involvement	No	No	1–3 years	<$100,000	Increasing awareness will reduce losses by empowering the public to add mitigation measures.	HMGP, BRIC, FMA	Medium

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				lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms		mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/TV announcements at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources) (public education).								
41	Building Code Review/ Updates	No	Promote resilient new develop-ment.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane/ tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms	Communities are safer and more resilient when new construction and substantial improvements take into account the latest information on hazard vulnerabilities and measures to reduce risk.	Building Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable (prevention).	County-led action items with direct municipal involvement	No	No	1–3 years	<$100,000	Prevent property damage and losses by ensuring codes are up to date.	HMGP, BRIC, FMA	Medium
42	Building Code Enforcement Officer Training	No	Promote resilient new develop-ment.	Drought, earthquake, extreme temperature, flooding, hazardous	There can be a loss of institutional knowledge with staff changes. Even when staff is the same, continual training improves local capabilities and allows	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training (prevention).	County-led action items with direct municipal involvement	No	No	1–3 years	<$100,000	Prevent property damage and losses by ensuring codes are up to date.	HMGP, BRIC, FMA	Medium

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				materials, high winds, hurricane/ tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms	officials to better regulate activities in hazard areas to protect lives and property.									
43	Courtesy Review of Draft Comprehen-sive Plans	No	Improve capabilities.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane/ tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms	A long-term vision for the community that does not take into account hazard areas can put lives and property at risk. Taking into account natural hazards and hazard mitigation measures can make the community more resilient.	Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department (prevention).	County-led Action Items with Direct Municipal Involvement	No	No	1 year	< $100,000	Encourages smart development practices and prevents future damages	HMGP, BRIC, FMA	Medium
44	Municipal Natural Hazards and Hazard Mitigation Workshops	No	Improve capabilities.	Drought, earthquake, extreme temperature, flooding, hazardous materials, high winds, hurricane/	When municipal staff members aren't armed with information on zoning and planning issues that can arise regarding natural hazards and hazard mitigation, they may make decisions that don't foster community resiliency.	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation. (prevention)	County-led action items with direct municipal involvement	No	No	1–3 years	<$100,000	Encourage smart development practices and prevents future damages.	HMGP, BRIC, FMA	Medium

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				tropical storms, landslide, lightning, terrorism, tornado, utility, and infrastructure failure, wildfire, winter storms										
45	Little Hoosick River Flood Control Project Repair & Maintenance	No	Increase public awareness.	Flooding	Lack of repair and maintenance of flood control structures within and upstream of the Town of Berlin.	Work with Town of Berlin to renew maintenance on structures, rebuild if necessary, clean material out from behind the dams as necessary (county does not have direct jurisdiction).	County BPS and County Legislature for arranging the meeting; Local municipality for project implemen-tation	No	Yes	1–3 years	$500K–$1M	Reduce damages from potential future flooding.	HMGP, BRIC, FMA	Medium
46	Buskirk Covered Bridge Flood Management Project	No	Protect existing assets.	Infrastructure Failure	Comment received during the mitigation plan update from the Buskirk Fire Chief via Town of Hoosick requests that the county look into flooding issues at the site of the bridge and possible mitigation measures that may be warranted at the bridge	County BPS and County Highway will attend a meeting with Buskirk Fire Chief and Town of Hoosick to discuss further.	County BPS will schedule the meeting; County BPS and County Highway will attend. Buskirk Fire Chief and Town of Hoosick Supervisor will be invited to attend. Possible Phase 2: study if necessary Possible Phase 3:	No	Yes	1–3 years	$500K–$1M	Potentially prevent loss of historic bridge.	HMGP, BRIC, FMA	Medium

Project #	Project Name	Action Worksheet (Yes/No)	Goal/ Objective Being Met	Hazard to Be Mitigated	Description of the Problem	Description of the Solution	Lead Agency	Related to CF?	EHP Issues	Estimated Timeline	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority
							project if necessary.							
47	Mitigation of Repetitive Loss Properties (RLPs)	No	Protect existing assets.	Flood	A total of 23 NFIP RLPs are located across 8 municipalities in Rensselaer County.	The county will support property owners who wish to undertake flood mitigation on private property.	BPS and Planning	No	No	1–3 years	<$100,000	Prevent future private property damage.	HMGP, BRIC, FMA	Low

Table 17 Prioritization of Mitigation Actions for Rensselaer County

Action #	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Priority
1	3	3	2	3	3	3	2	High
2	4	3	2	3	3	3	2	High
3	4	3	3	3	3	3	3	High
4	4	3	3	3	3	3	4	High
5	4	2	2	3	3	3	4	Medium
6	2	3	3	3	2	3	2	Medium
7	3	3	3	3	3	3	3	Medium
8	3	2	2	3	3	2	3	Medium
9	4	4	3	4	4	4	4	Medium
10	3	2	2	3	3	3	3	Medium
11	3	2	2	3	3	3	3	Medium
12	3	2	2	3	3	3	3	Medium
13	3	2	3	3	2	2	2	Low
14	4	3	2	4	3	3	2	Medium
15	4	2	2	3	3	2	3	Medium
16	3	2	3	3	3	2	4	Medium
17	3	4	3	2	2	3	3	Medium
18	3	3	3	3	3	3	3	Medium
19	4	3	2	3	3	3	2	High
20	3	3	3	3	3	3	3	Medium

Action #	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Priority
21	3	3	3	3	3	3	3	Medium
22	4	3	2	3	3	3	2	High
23	4	4	3	4	4	3	4	Medium
24	4	4	3	4	4	3	4	Medium
25	3	2	2	3	3	2	3	Low
26	3	3	2	4	3	3	3	Medium
27	3	3	2	4	3	3	3	Medium
28	3	3	3	4	3	3	3	Medium
29	4	3	3	4	3	3	3	Medium
30	4	4	3	4	4	3	3	Medium
31	3	2	2	3	3	2	3	Medium
32	2	3	3	3	3	3	3	Medium
33	2	3	3	3	3	3	3	Medium
34	2	3	3	3	3	3	3	Medium
35	3	3	3	3	3	3	3	Medium
36	3	3	3	3	3	3	3	Medium
37	3	3	2	3	3	3	3	Medium
38	3	3	3	3	3	3	3	Medium
39	3	3	3	3	3	3	3	Medium
40	4	4	3	4	4	3	4	Medium
41	4	3	2	4	3	3	3	Medium
42	4	3	2	4	3	3	3	Medium

Action #	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Priority
43	4	2	2	3	3	3	3	Medium
44	4	2	2	3	3	3	3	Medium
45	3	2	2	3	2	3	2	Medium
46	3	3	3	4	3	3	3	Medium
47	2	2	2	3	2	2	3	Low