

VENANGO COUNTY 2025

HAZARD MITIGATION PLAN UPDATE



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Certification of Annual Review Meetings

The Venango County Hazard Mitigation Steering Committee (HMSC) has reviewed this Hazard Mitigation Plan (HMP) Update. See [Section 8](#) for further details regarding this form. The HMSC hereby certifies the review.

Year	Date of Meeting	Public Outreach Addressed?*	Signature
2021	N/A	N/A	To the best knowledge of the Venango County HMSC, no HMP meetings were held before the beginning of the HMP Update process. See Section 3 of the Venango County 2025 HMP Update for details regarding the meetings held during this process.
2022	N/A	N/A	
2023	N/A	N/A	
2024	N/A	N/A	
2025	See Section 3	See Section 3	

**Confirm yes here annually and describe on record of changes page.*

RECORD OF CHANGES

Date	DESCRIPTION OF CHANGE MADE, MITIGATION ACTION COMPLETED, OR PUBLIC OUTREACH PERFORMED	CHANGE MADE BY (PRINT NAME)	CHANGE MADE BY (SIGNATURE)
2021-2025	To the best knowledge of the Venango County HMSC, no HMP progress reports were submitted from municipalities for the period from 2021 through 2025, although mitigation actions were accomplished in this period. Progress on actions is discussed in detail in Section 6.1 of this plan.	N/A	N/A

REMINDER: Please attach all associated meeting agendas, sign-in sheets, handouts, and minutes.

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ACRONYMS

Acronym	Definition
ACS	American Communities Survey
ATV	All-Terrain Vehicle
BIL	Bipartisan Infrastructure Law
BLM	Black Live Matter
CASA	Court Appointed Special Advocates
CFR	Code of Federal Regulations
CRCI	Community Resilience Challenges Index
CRS	Community Rating System
DCED	Department of Community and Economic Development
DCNR	Department of Conservation and Natural Resources
DCNR-BOF	Department of Conservation and Natural Resources-Bureau of Forestry
DEP	Department of Environmental Protection
DES	Department of Emergency Services
DMA	Disaster Mitigation Act
DOH	Department of Housing
EMC	Emergency Management Coordinator
EMPG	Emergency Management Performance Grant
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance Program
GIS	Geographic Information System
HHPD	High Hazard Potential Dam
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HMPT	Hazard Mitigation Planning Team
HMSC	Hazard Mitigation Steering Committee
IBC	International Building Code
ICC	International Code Council
LEPC	Local Emergency Planning Committee

Acronym	Definition
MMI	Modified Mercalli Intensity
MPH	Miles Per Hour
MSHA	Labor Mine Safety and Health Administration
NCDC	National Climatic Data Center
NCEI	National Centers for Environmental Information
NDIS	National Drought Information System
NDMC	National Drought Mitigation Center
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHC	National Hurricane Center
NIDIS	National Integrated Drought Information System
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
OES	Office of Emergency Services
PA DEP	Pennsylvania Department of Environmental Protection
PA DOH	Pennsylvania Department of Health
PaGWIS	Pennsylvania Groundwater Information System
PASDA	Pennsylvania Spatial Data Access
PDSI	Palmer Drought Severity Index
PEMA	Pennsylvania Emergency Management Agency
PennDOT	Pennsylvania Department of Transportation
PGA	Peak Ground Acceleration
PHARE	Pennsylvania Housing Affordability and Rehabilitation Enhancement Fund
PHMSA	Pipeline and Hazardous Materials Safety Administration
PwD	Persons with Disabilities
RF	Risk Factor
SALDO	Subdivision and Land Development Ordinance
SARA	Superfund Amendments and Reauthorization Act
SFHA	Special Flood Hazard Area
SFIP	Standard Flood Insurance Policy
SOG	Standard Operating Guide
SRL	Severe Repetitive Loss
TDS	Total Dissolved Solids
TRI	Toxic Release Inventory
UCC	Universal Construction Code
UCIP	United Community Independence Programs of Venango County
US	United States
US DOT	United States Department of Transportation

Acronym	Definition
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VCRPC	Venango County Regional Planning Commission
VCTO	Venango County Transportation Office
WYO	Write Your Own

1. INTRODUCTION

1.1 Background

Across the United States, natural and human-made disasters have led to increasing levels of deaths, injuries, property damage, and interruption of business and government services. The time, money, and effort needed to recover from these disasters exhausts resources, diverting attention from important public programs. Since 1955 there have been a combined 63 Presidential Disaster Declarations and Emergency Declarations in Pennsylvania, 32 of which have included Venango County. The emergency management community, citizens, elected officials and other stakeholders in Venango County, Pennsylvania recognize the impact of disasters on their community and support proactive efforts needed to reduce the impact of natural and human-made hazards.

Hazard mitigation is sustained actions taken to prevent or minimize long-term risks to life and property from hazards. Pre-disaster mitigation actions are taken in advance of a hazard event and are essential to breaking the disaster cycle of damage, reconstruction, and repeated damage. With careful selection, successful mitigation actions are cost-effective means of reducing risk of loss over the long-term.

Hazard mitigation planning has the potential to produce long-term and recurring benefits by breaking the cycle of loss. A core assumption of mitigation is that current dollars invested in mitigation practices will significantly reduce the demand for future dollars by lessening the amount needed for recovery, repair, and reconstruction. These mitigation practices will also enable residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the economy back on track sooner and with less interruption.

Accordingly, the Venango County Hazard Mitigation Steering Committee (HMSC), composed of government leaders in the Venango County Department of Public Safety, Venango County Planning Commission, in cooperation with the elected officials of the County and its municipalities, have prepared this Hazard Mitigation Plan (HMP) Update. The Plan is the result of work by local officials and citizens of the County to develop a pre-disaster multi-hazard mitigation plan that will not only guide the County towards greater disaster resistance but will also respect the character and needs of the community.

1.2. PURPOSE

This HMP Update was developed for the purpose of:

- Providing a blueprint for reducing property damage and saving lives from the effects of future natural and human-caused disasters in Venango County;
- Complying with state and federal legislative requirements for County mitigation in order for the County to be eligible for federal and technical assistance from state and federal hazard mitigation programs;

- Identifying, introducing, and implementing cost-effective hazard mitigation measures in order to accomplish County goals and objectives and to raise awareness and acceptance of hazard mitigation;
- Demonstrating a firm local commitment to hazard mitigation principles; and
- Improving community resiliency following a disaster event.

Adoption of this plan supports Venango County and participating jurisdictions eligibility to apply for and receive certain federal grant funds that are administered by the Commonwealth of Pennsylvania for Federal Emergency Management Agency (FEMA). This plan complies with the requirements of the Disaster Mitigation Act of 2000 and its implementing regulations published in Title 44 of the Code of Federal Regulations (CFR) Section 201.6.

1.3. SCOPE

The Venango County 2025 HMP Update has been prepared to meet requirements set forth by FEMA and the Pennsylvania Emergency Management Agency (PEMA) in order for the County to be eligible for funding and technical assistance from state and federal hazard mitigation programs. It will be updated and maintained to address both natural and human-made hazards determined to be probable and/or present a risk for multiple deaths/injuries and property damages to the local municipalities within the County. Updates will take place following significant disasters or, at a minimum, this plan will be subject to review and update on an annual basis.

In accordance with the Disaster Mitigation Act (DMA) of 2000, the HMP Update documents the following topics:

- Planning Process;
- Hazard Identification;
- Risk Assessment;
- Mitigation Strategy: Goals, Objectives, and Actions;
- Formal Adoption by the Participating Jurisdictions; and
- PEMA and FEMA approval.

The report format is structured in accordance with the most current planning guidance from FEMA, Local Mitigation Planning Policy Guide (2022), and PEMA, Commonwealth of Pennsylvania's All-Hazard Mitigation Planning Standard Operating Guide (SOG) (2020). The overall format between the 2025 HMP Update and the 2020 HMP Update has remained largely unchanged.

It should be noted that future funding for mitigation projects will be contingent upon having each jurisdiction in Venango County adopt the plan. Any jurisdiction that does not adopt the 2025 HMP Update within one year of plan approval will be ineligible for pre- and post-disaster mitigation funds and must take additional steps before adopting the plan.

1.4. AUTHORITY AND REFERENCE

Authority for this plan originates from the following federal sources:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, as amended;
- CFR, Title 44, Parts 201 and 206;
- Disaster Mitigation Act of 2000, Public Law 106-390, as amended; and
- National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 *et seq.*
- Executive Order 12989 on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. February 1994.
- Executive Order 13985 on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government. January 2021.
- Executive Order 14008 on Tackling the Climate Crisis at Home and Abroad. January 2021.
- Executive Order 14030 on Climate-Related Financial Risk. May 2021.

Authority for this plan originates from the following Commonwealth of Pennsylvania sources:

- Pennsylvania Emergency Management Services Code. Title 35, Pa C.S. Section 101;
- Pennsylvania Municipalities Planning Code of 1968, Act 247 as reenacted and amended by Act 170 of 1988; and
- Pennsylvania Stormwater Management Act of October 4, 1978. P.L. 864, No. 167.
- Pennsylvania Floodplain Management Act of 1978. P.L. 851, No. 166.
- Pennsylvania Hazardous Material Emergency Planning and Response Act of 1990 (Act 165)

The following FEMA guides and reference documents were used to prepare this document:

- FEMA 386-1: *Getting Started*. September 2002.
- FEMA 386-2: *Understanding Your Risks: Identifying Hazards and Estimating Losses*. August 2001.
- FEMA 386-3: *Developing the Mitigation Plan*. April 2003.
- FEMA 386-4: *Bringing the Plan to Life*. August 2003.
- FEMA 386-5: *Using Benefit-Cost Review in Mitigation Planning*. May 2007.

- FEMA 386-6: *Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning*. May 2005.
- FEMA 386-7: *Integrating Manmade Hazards into Mitigation Planning*. September 2003.
- FEMA 386-8: *Multijurisdictional Mitigation Planning*. August 2006.
- FEMA 386-9: *Using the Hazard Mitigation Plan to Prepare Successful Mitigation Projects*. August 2008.
- FEMA: *Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials*. March 2013
- FEMA: *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*. January 2013.
- FEMA: *National Fire Incident Reporting System 5.0: Complete Reference Guide*. January 2015.
- FEMA: *Hazard Mitigation Assistance Unified Guidance*. February 2015.
- FEMA: *Local Mitigation Planning Handbook*. May 2023.
- FEMA: *Local Mitigation Planning Policy Guide*. April 2022.
- FEMA. *Region 3 High Hazard Potential Dams: Local and Tribal Mitigation Planning Tips*. July 2024.
- FEMA. *Rehabilitation of High Hazard Potential Dams (HHPD) Grant Program FAQ*. June 2020.

The following Pennsylvania Emergency Management Agency (PEMA) guides and reference documents were used prepare this document:

- PEMA: *Hazard Mitigation Planning Made Easy!*
- PEMA *Mitigation Ideas: Potential Mitigation Measures by Hazard Type; A Mitigation Planning Tool for Communities*. March 2009.
- PEMA. *Administrative Processes*. December 20, 2019.
- PEMA: *Pennsylvania's Hazard Mitigation Planning Standard Operating Guide*. October 2020.

The following additional guidance document produced by the National Fire Protection Association (NFPA) was used to update this plan:

- NFPA 1600: *Standard on Disaster/Emergency Management and Business Continuity*

2. COMMUNITY PROFILE

2.1. GEOGRAPHY AND ENVIRONMENT

Venango County is situated on the Allegheny Plateau in the northwestern section of Pennsylvania, about halfway between Erie and Pittsburgh. While it is primarily located in the Appalachian Plateau region, small portions of the northwestern and western land mass are glaciated. The County's topography is steeply rolling with drainage provided by the Allegheny River and French Creek watersheds. The land is composed of mountainous areas and steep sandstone ridges with deep, irregular patterned branching streams. Venango County has a land area of 675 square miles of land (U.S. Census Bureau, 2015). The County encompasses 31 municipalities including nine boroughs, 20 townships, and the cities of Oil City and Franklin, the County Seat. Venango County is bordered by Crawford, Warren, Forest, Clarion, Armstrong, Butler, and Mercer Counties.



Figure 2.1-1: Venango County Courthouse (Kiddle, 2024)



Figure 2.1-2: Downtown Franklin Pennsylvania

Venango County is also characterized by the abundance of forest land within its borders. The county is situated in the Appalachian Oak Forest, a tall broadleaf deciduous forest characterized by white oak and northern red oak, as the dominant trees. Other species that are native to the area include sugar maple, sweet birch, bitternut hickory, beech, tulip poplar, white pine, scarlet oak, scrub oak, chestnut oak, and black oak. Major park lands include Oil Creek State Park and Two-Mile Run Park.

The major watersheds are: Slippery Rock Creek, Allegheny River, French Creek, Oil Creek, Sandy Creek, East Sandy Creek, Wolf Creek, and Sugar Creek watersheds (see Figure 2.1-5). Each of these basins drain surface water into the major streams and rivers running through the County. The major sources of surface water in Venango County are the Allegheny River, Oil Creek, French Creek, Sandy Creek, and East Sandy Creek. There are only two major impoundments located in Venango County. One is Justus Lake, a 144-acre lake situated in

the heart of Two-Mile Run County Park in Oakland Township and Sugarcreek Borough. The other, Kahle Lake, is located in both Richland Township, Venango County and Salem Township, Clarion County and is comprised of about 250 acres.

Average highs for the summer linger near 80°F while the maximum temperatures experienced in the summer are usually around 87°F. Cloudiness is prevalent in winter as a result of the “lake effect” of cold air passing over the relatively warm Lake Erie, picking up moisture and resulting in cloud formation. The County’s prevailing January temperatures average about 27°F while the minimum temperatures experienced then dip to 10°F (Weather Underground, 2015). There are about 130 frost-free days during the year in Venango County. On the average, 140 days of the year will experience some form of precipitation. Annual rainfall is about 40 inches. The average annual snowfall amounts to about 50 inches a year. The first measurable snowfall typically occurs in late November or early December. Most storms result in snowfalls of 10 inches or less. After March, the chance of snow diminishes rapidly.

Figure 2.1-3: Venango County Base Map

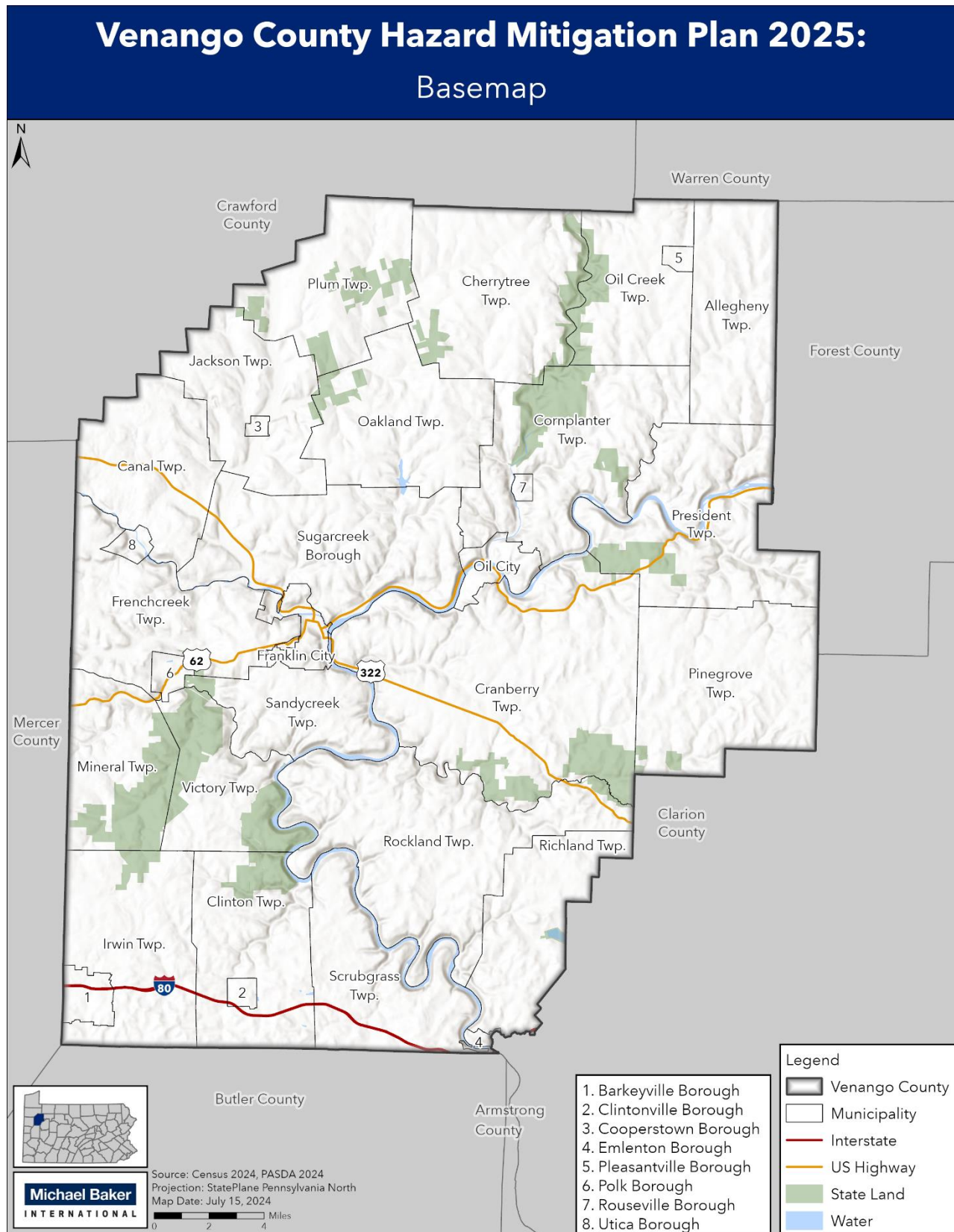


Figure 2.1-4: Venango County Agricultural Land Use

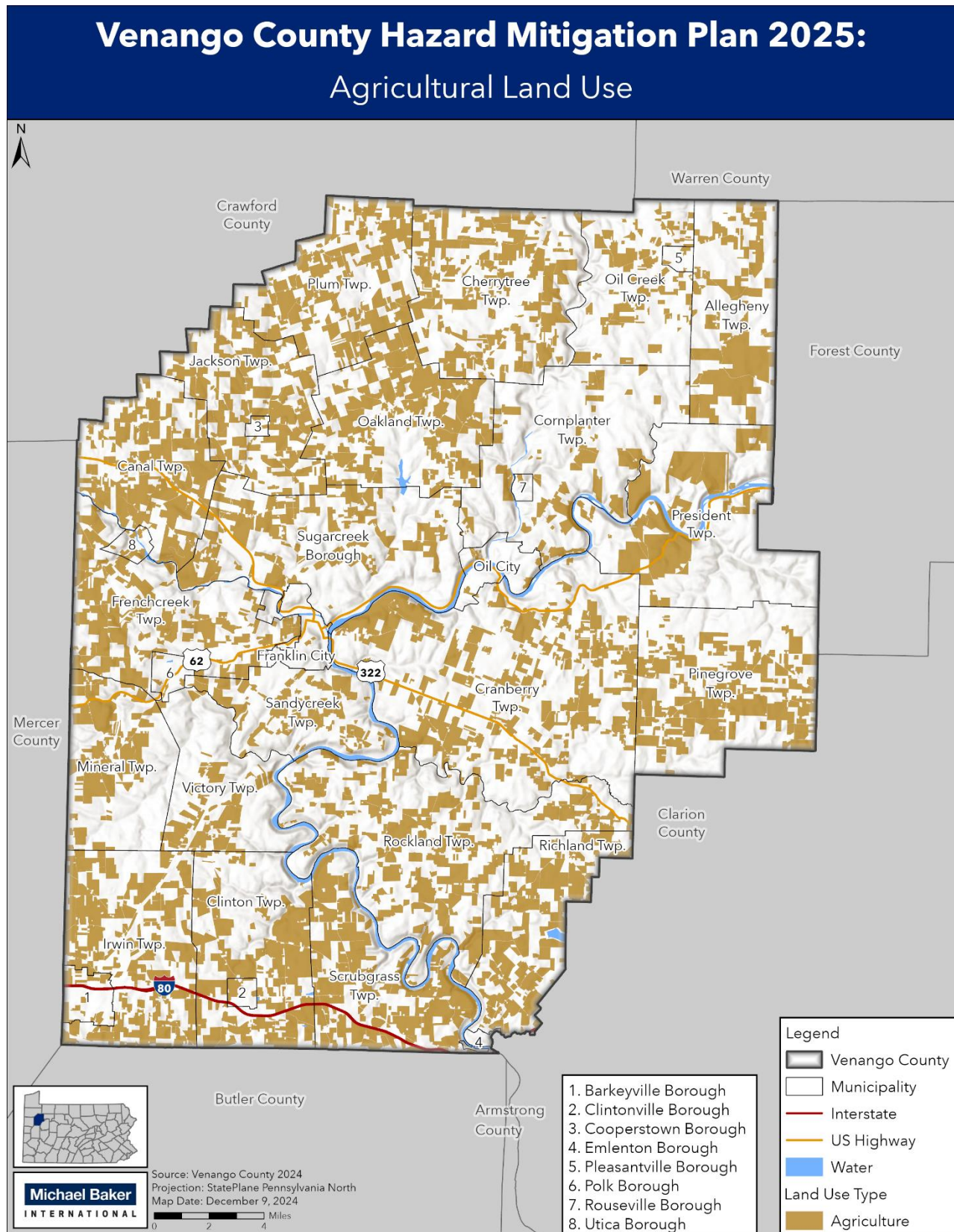
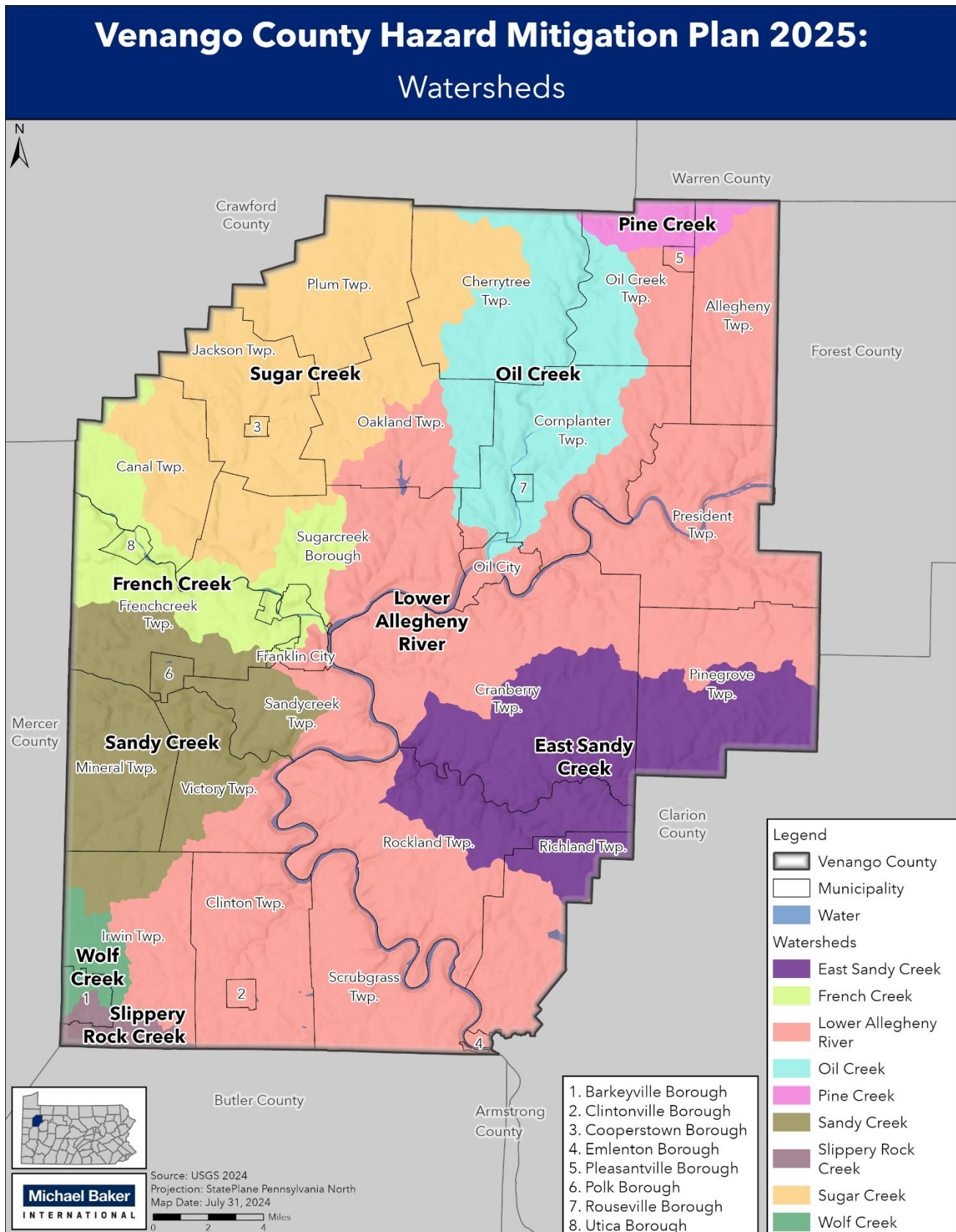


Figure 2.1-5: Venango County Watersheds



2.2. COMMUNITY FACTS

Venango County, the birthplace of the petroleum industry, was created on March 12, 1800, from parts of Allegheny and Lycoming Counties. The name derives from the Native American name of the region, "Onenge," meaning "Otter." It was home to the world's first commercially successful well drilled for oil, struck in 1859. Known as "Drake's Well," this led to the oil boom bringing oil barons to the county. John D. Rockefeller set up an office building still in existence today in Oil City.

Located half-way between Pittsburgh and Erie, Venango County produces some of the best hardwoods in the world and has replaced large oil companies with a mix of metal industries, electronics firms, chemical industries, service industries, and various small businesses. Agriculture remains an important part of the economy and way of life along with hunting, fishing, and outdoor recreation.

There are 530.33 miles of state highways, 223 state-owned bridges, and 66 locally owned bridges in Venango County. The major transportation routes in Venango County are:

- Interstate 80 which runs through the southernmost part of the county providing connection between Mercer and Clarion Counties;
- Route 322 which runs through Franklin, connecting Crawford and Clarion Counties;
- Route 62 which runs through Franklin and Oil City connecting Mercer and Forest Counties; and
- Route 8, which runs through Franklin and Oil City connecting Butler and Crawford Counties.

The County is served by the Venango Regional Airport located 2 miles south of Franklin. Rail freight service from Pittsburgh to Meadville and Oil City is operated by Norfolk Southern, between Rouseville and Titusville is operated by the Oil Creek and Titusville Lines and the Western New York and Pennsylvania Line.

The Venango County Transportation Office (VCTO) provides three basic types of transportation services including fixed-routes, shared ride, and exclusive or premium services limited to agency clientele. The fixed routes connected areas within the county including oil city, Franklin, and surrounding regions. The shared-ride services, including persons with disabilities (PwD), operate Monday through Friday and require advanced registration. The routes vary according to daily schedules, generally limiting to Venango County with the exception to neighboring counties for Medial trips. Transportation to Creekside and Scrubgrass Senior Centers is provided at no charge.

Venango County was previously home to one institution of higher learning. Clarion University, Venango Campus is in Oil City. Pennsylvania Western University, the Pennsylvania State System of Higher Education institution made from the 2022 merger of Clarion, Edinboro and California universities announced its intent to transfer ownership of its Venango satellite campus in January of 2024. The Venango campus is a part of PennWest

Clarion and is located in Oil City. It sits on 65 acres and currently only served students training to be nurses in the Associate of Science in Nursing program. According to PennWest, enrollment at the Venango campus declined from 450 students in fall 2001 to 95 in fall 2023.

PennWest transferred its ownership of the property to the Oil Region Alliance of Business on July 1, 2024. The nonprofit organization manages the assets of the federally designated Oil Region National Heritage Area. The transfer is contingent upon approval from PASSHE's Board of Governors and the state legislature. The ORA said that it plans to utilize the property to "further its mission of heritage preservation, economic development, recreation, tourism and arts revitalization." It will host job training programs on the site and continue to support the Venango Conservation Hall of Fame in the campus' Rhoades Center and the Barbara Morgan Harvey Center for the Study of Oil Heritage in the Charles L. Suhr Library.

There are 8 public school districts, and 5 private and parochial schools (PA DOR, 2015). Venango County has three public libraries within its borders: the Cooperstown Public Library, the Franklin Public Library and the Oil City Library. These libraries were recently unified under the title of the Oil Region Library Association. A list of critical facilities in Venango is provided in **Appendix E**.

Table 2.2-1 breaks down Venango County's industry sections by the number of establishments and employees. The largest industries are Retail Trade leading with 2,364 employees, which is 17% of the workforce, and with only 193 establishments. This is followed by other services excluding public administration with 777 employees (16% of the workforce) and 181 establishments. Healthcare and social assistance, construction, and accommodation and food services are also major employer sectors within the County. Major employers in the County include, UPMC Northwest, a major regional healthcare organization and part of the larger UPMC healthcare system, Joy Global Underground Mining Inc (now owned by Komatsu) closed a large manufacturing facility in the county in 2016 but still has a large presence in the County and employs many at its remaining Venango County facility. Other top employers include Wal-Mart Associates Inc., and Liberty Electronics, Venango County, Franklin Area School District, Matric Limited, and Oil City School District (Venango County Department of Labor and Industry, 2024).

Table 2.2-1: Venango County Industry Sections by Establishments and Employees			
Industry Sector	Establishments	Employees	Percentage of Workforce
Agriculture, forestry, fishing and hunting	7	13	1%
Mining, quarrying, and oil and gas extraction	8	45	1%
Utilities	11	199	1%
Construction	96	470	8%
Manufacturing	83	3,150	7%
Wholesale trade	36	476	3%

Table 2.2-1: Venango County Industry Sections by Establishments and Employees

Industry Sector	Establishments	Employees	Percentage of Workforce
Retail trade	193	2,364	17%
Transportation and warehousing	46	787	4%
Information	23	135	2%
Finance and insurance	46	297	4%
Real estate and rental and leasing	24	80	2%
Professional, scientific, and technical services	58	275	5%
Management of companies and enterprises	4	97	0%
Administrative and support and waste management and remediation services	40	493	3%
Educational services	8	49	1%
Health care and social assistance	172	3,328	15%
Arts, entertainment, and recreation	12	218	1%
Accommodation and food services	104	1,273	9%
Other services (except public administration)	181	777	16%
Source: U.S. Census Bureau, 2022 County Business Patterns			

2.3. POPULATION AND DEMOGRAPHICS

Population and demographic data provide baseline information for assessing the potential magnitude of hazards and can be used to identify trends in high-risk populations. This section includes baseline demographic trends for Venango County.

According to the 2023 Census Estimate, the population of Venango County is approximately 49,431. This is a decrease of an estimated 3,224 residents since the 2010 Census. This number reflects a continuing decrease in residents since the 2000 Census. Trends show that Venango County's population has been decreasing since the 1960s as seen in Table 2.3-1.

Table 2.3-1: Venango County Population Trends		
Year	Population	% Change
1950	65,038	-
1960	65,295	0.4%
1970	62,353	-4.5%
1980	64,444	3.4%
1990	59,381	-7.9%
2000	57,565	-3.1%
2010	53,320	-7.4%
2018	52,376	-1.8%
2020	51,355	-1.9%
2023 (Estimate)	50,096	-2.5%
Total % Change	-	-23%
Source: U.S. Census Bureau		

Table 2.3-2 shows the distribution of the County population by municipality in the 2010 Census and the 2018 5-Year American Community Survey Estimates. Some of the most populated municipalities are:

- Cranberry Township;
- City of Franklin;
- Oil City;
- Sandycreek Township;
- Sugarcreek Borough

The least populated municipalities (populations of fewer than 500 people) in Venango County include:

- Allegheny Township
- Barkeyville Borough

- Cooperstown Borough
- Mineral Township
- President Township
- Rouseville Borough
- Victory Township

The largest decrease in percent population change took place in Barkeyville (-34%), Polk Borough (-25%), and Victory Township (-22%).

Table 2.3-2 : Venango County Population by Municipality

Municipality	2020 Population	2022 Population	Population Difference	Percent Change (%)
Allegheny Township	284	259	-25	-9%
Barkeyville Borough	188	252	64	34%
Canal Township	937	755	-182	-19%
Cherrytree Township	1,308	1,392	84	6%
Clinton Township	953	872	-81	-8%
Clintonville Borough	439	498	59	13%
Cooperstown Borough	399	373	-26	-7%
Cornplanter Township	2,320	2,210	-110	-5%
Cranberry Township	6,342	6,338	-4	0%
Emlenton Borough	611	650	39	6%
Franklin City, City of	6,077	6,066	-11	0%
Frenchcreek Township	1,427	1,282	-145	-10%
Irwin Township	1,253	1,252	-1	0%
Jackson Township	917	1,054	137	15%
Mineral Township	498	489	-9	-2%
Oakland Township	1,361	1,412	51	4%
Oil City, City of	9,613	9,599	-14	0%
Oil Creek Township	753	555	-198	-26%
Pinegrove Township	1,328	1,320	-8	-1%
Pleasantville Borough	846	777	-69	-8%
Plum Township	903	864	-39	-4%
Polk Borough	634	795	161	25%
President Township	448	461	13	3%
Richland Township	777	737	-40	-5%
Rockland Township	1,243	1,133	-110	-9%
Rouseville Borough	457	521	64	14%
Sandycreek Township	2,055	2,397	342	17%

Table 2.3-2 : Venango County Population by Municipality

Municipality	2020 Population	2022 Population	Population Difference	Percent Change (%)
Scrubgrass Township	749	795	46	6%
Sugarcreek Borough	4,775	4,785	10	0%
Utica Borough	184	123	-61	-33%
Victory Township	375	459	84	22%
Year	Total Population		% Change	
2020	51,355		-	
2023	50,096		-2.5%	
Source: 2020 Census, U.S. Census Bureau, ACS 2022 5-Year Estimates				

Recent demographic trends in Venango County are summarized in the Table 2.3-3 based on the census data available. The population is 50,475 people in Venango County compared to the 10,660,341 people in all of Pennsylvania.

Table 2.3-3: Venango County Demographic Summary

Demographic Category	Venango County	Pennsylvania
Population	50,475	10,660,341
Male/Female	25,174 / 25,301	6,399,830 / 6,572,178
Median Age	47.6	41
Percent Persons Under 18 Years Old	18.9%	20.2%
Percent Persons 65 Years Old and Over	23.7%	19.6%
Racial Demographics	Venango County	Pennsylvania
Percent White Persons	95%	74.4%
Percent Black Persons	1.2%	10.5%
Percent American Indian and Alaska Native Persons	0%	0.3%
Percent Asian	0.4%	3.8%
Percent Native Hawaiian and Other Pacific Islander	0%	0%
Percent Persons Reporting Two or More Races	2.8%	7.2%
Percent Persons of Hispanic or Latino Origin	1.1%	8.6%
Percent White Persons Not Hispanic	94.7%	91.4%
Poverty Rate	Venango County	Pennsylvania
Percent Population in Poverty	13.4%	11.8%
Source : U.S. Census Bureau, ACS 2022 5-Year Estimates		

Venango County's population is also gradually getting older. The median age of County residents is 47.6. This is well above the median age 41 of residents across Pennsylvania. It is noteworthy that the percentage of the County's population over 65 years of age has

increased from 18% in 2010 to 23.7% in 2020. And conversely, the percentage of residents under 18 years of age has dropped from 21.5% in 2010 to 18.9% in 2020. This aging trend is typical of most counties throughout northwestern Pennsylvania. Due to the large percentage of senior citizens, the County will need to develop hazard mitigation and preparedness strategies that take their needs into account. As senior citizens may not be able to drive, special evacuation plans may be required. Further, hearing or vision impairments could make receiving emergency instructions difficult. UPMC Northwest was engaged in the planning process because hospitals play a vital role in community resilience during disasters. They provide essential medical care, manage public health risks, and ensure continuity of critical services. By involving hospitals, you can address vulnerabilities like power outages, flooding, or supply chain disruptions, ensuring they remain operational and capable of supporting the community in emergencies.

Table 2.3-4: Venango County Age Demographic Summary (U.S. Census 2022 ACS)

Age	2010	2022
Under 18 Years	21.5%	18.9%
18-64 Years	60.5%	57.4%
65+ Years	18.0%	23.7%
Source: 2022 Estimates U.S. Census, American Community Survey		

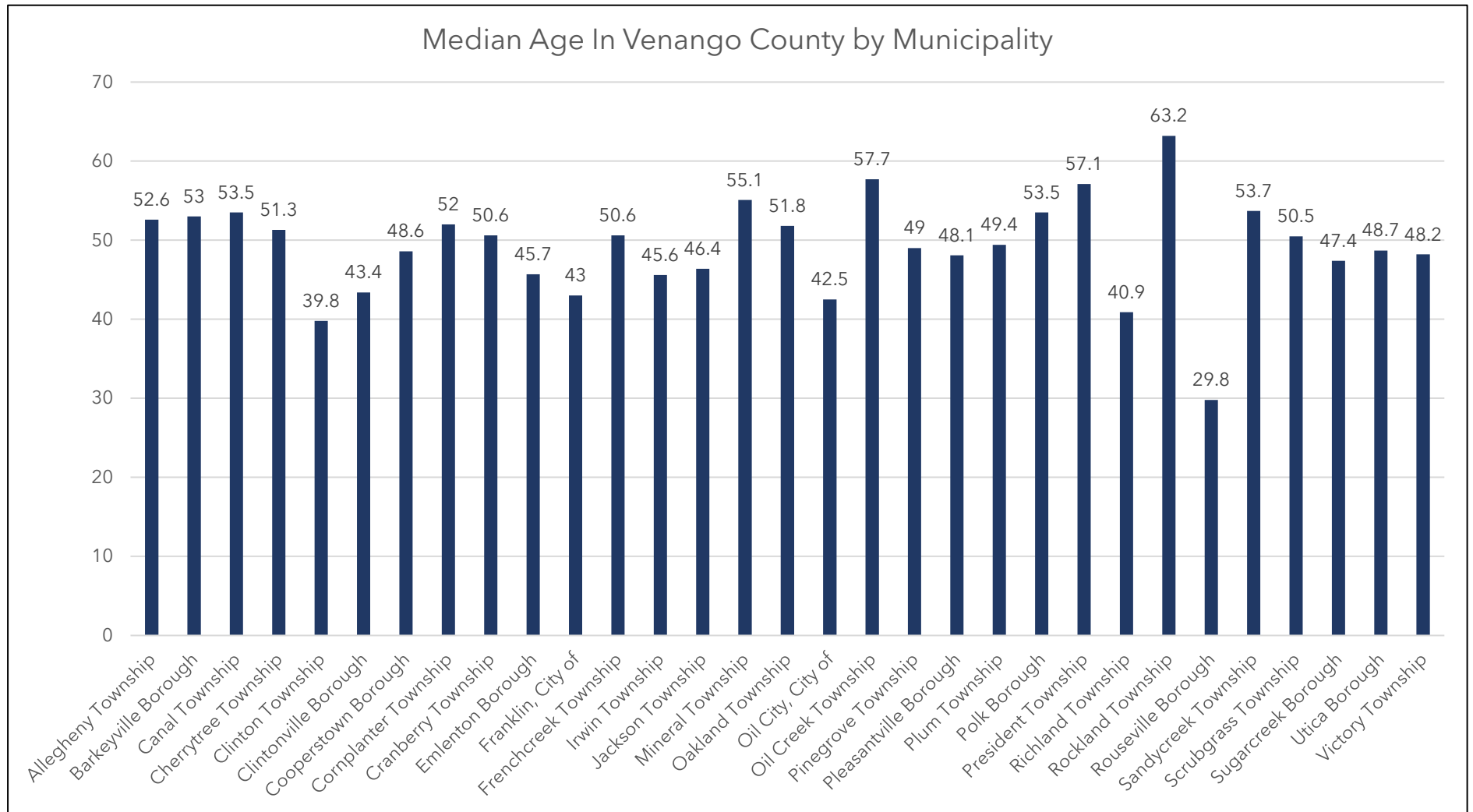
Consideration should also be given to address hazard mitigation actions for citizens with disabilities. According to the U.S. Census, American Community Survey 2022 Estimates, 18.8% (9,387 out of 51,664) of Venango County noninstitutionalized residents have a disability. Of this population 5.4% are under 18, 15.8% are ages 18 to 64 years old, and 37.4% are 65 years or over.

From a race and ethnic perspective, Venango County citizens are predominantly white, followed by Black or African American. 5% of Venango County citizens are not white.

Table 2.3-5: Race and Ethnicity Profile (U.S. Census 2022 ACS)

Demographic Indicator	2010	2022 Estimate
White	53,390	50,691
Black or African American	571	434
American Indian and Alaska Native	85	12
Asian	197	191
Native Hawaiian and Other Pacific Islander	11	0
Some Other Race	108	131
Two or More Races	622	917
Hispanic or Latino of any Race	478	567
Source: 2022 Estimates U.S. Census, American Community Survey		

Figure 2.3-1: Median Age in Venango County by Municipality



Source: U.S. Census Bureau, ACS 2023 5-Year Estimates

Table 2.3-1 Shows the median age in Venango County by municipality. This reveals the municipalities that may be more vulnerable to hazards due to older age. Rouseville Borough has a young median age of 29.8 years old, while the oldest median aged municipality is Rockland Township. Most municipalities are above the median age of Pennsylvania.

Table 2.3-6: Income Levels and Wage Statistics

Income (2022 Dollars)	Venango County (2022)	Pennsylvania (2022)
Median Household Income	\$59,278	\$73,170
Median Family Income	\$72,627	\$93,685
Per Capita Income	\$31,667	\$64,506
Source: U.S. Census Bureau, ACS 2022 5-Year Estimates		

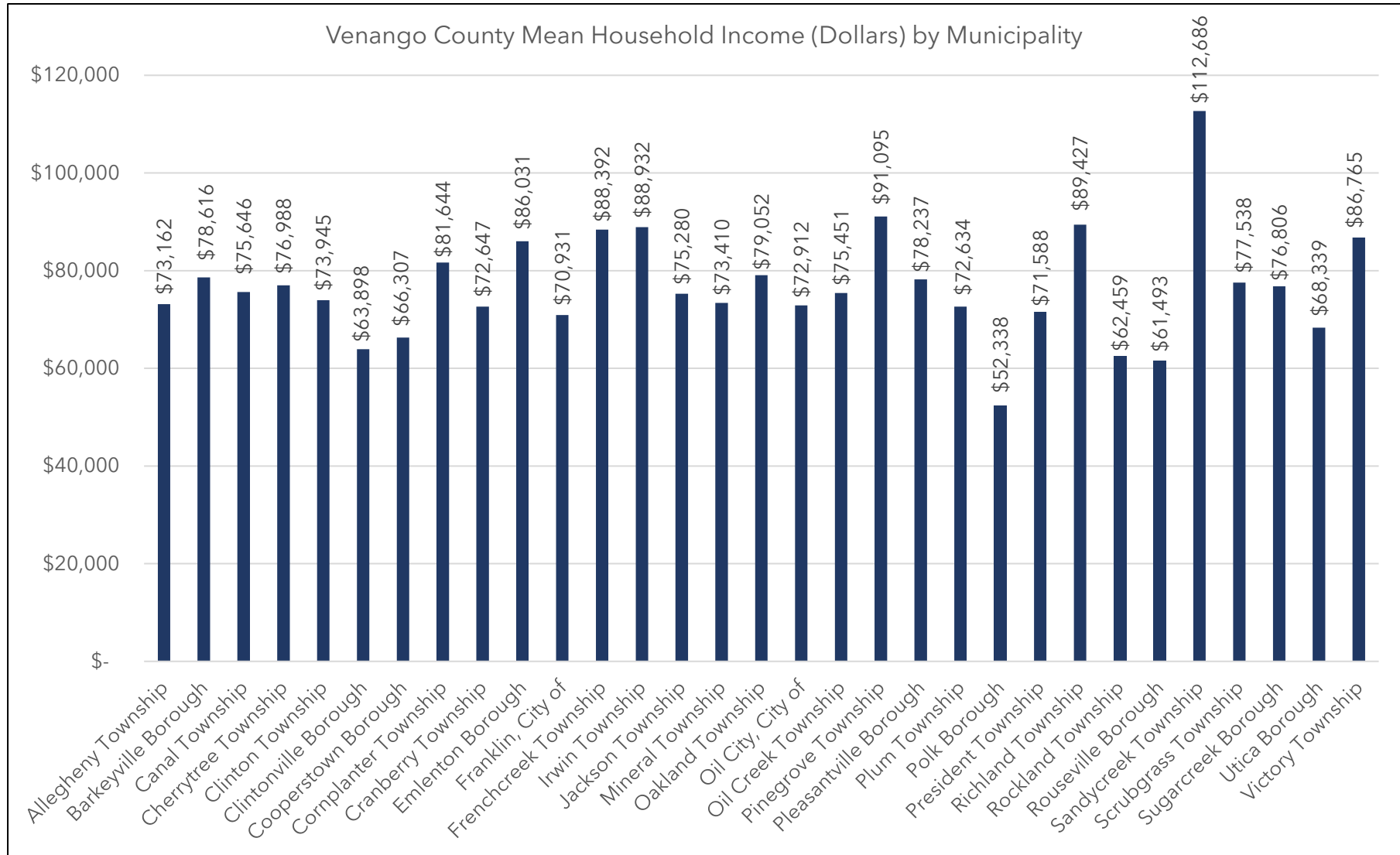
Per Table 2.3-6, median household income and median family income in Venango County are \$59,278 and \$72,627 respectively. The median household income is over \$13,000 less than Pennsylvania's median household income. The median family income in Venango County is \$72,627, which is over \$20,000 less than Pennsylvania's median family income.

Approximately 74% of Venango County residents in the workforce are employed within the County. Approximately 26% of Venango County residents work outside of Venango County. With most of the community members living and working within the County, it is important to plan for disaster in order to keep the local economy alive in the event of disaster.

According to the U.S. Census 2018 Estimate, 55.3% of the population 16 years of age and older are in the civilian labor force (44.7% are not in the labor force). This translates to an unemployment rate of 3.7%, which is slightly higher than Pennsylvania's unemployment rate (3.4%).

Table 2.3-1 Venango County Mean Household Income reveals the average household income by municipality. The municipality with the highest household income is Sandycreek Township (\$112,686). The next highest is Pinegrove Township with a mean household income of \$91,095. The municipalities with the lowest mean household income is Polk Township (\$52,332), Rockland Township (\$62,495), and Clintonville Township (\$63,898).

Figure 2.3-2: Venango County Mean Household Income, by Municipality



Source: U.S. Census Bureau, ACS 2023 5-Year Estimates hold Income (Dollars) by Municipality

As seen in Table 2.3-7, U.S. Census data shows there are 26,276 total housing units, with a total of 4,953 vacant housing units. Vacant buildings are particularly vulnerable to arson and criminal activity. Since vacant properties are often not maintained, many may be structurally deficient. Citizens renting homes are typically more transient than homeowners, therefore communicating with citizens who are renters may be more difficult than communicating with homeowners.

Table 2.3-7: Housing Characteristics

Housing Characteristic	Venango County (2022)
Total Housing Units	26,276
Occupied Housing Units	21,323
Vacant Housing Units	4,953
Owner-Occupied Housing Units	16,024
Renter-Occupied Housing Units	5,299
Median Home Value	\$108,500
Source: U.S. Census Bureau, ACS 2022 5-Year Estimates	

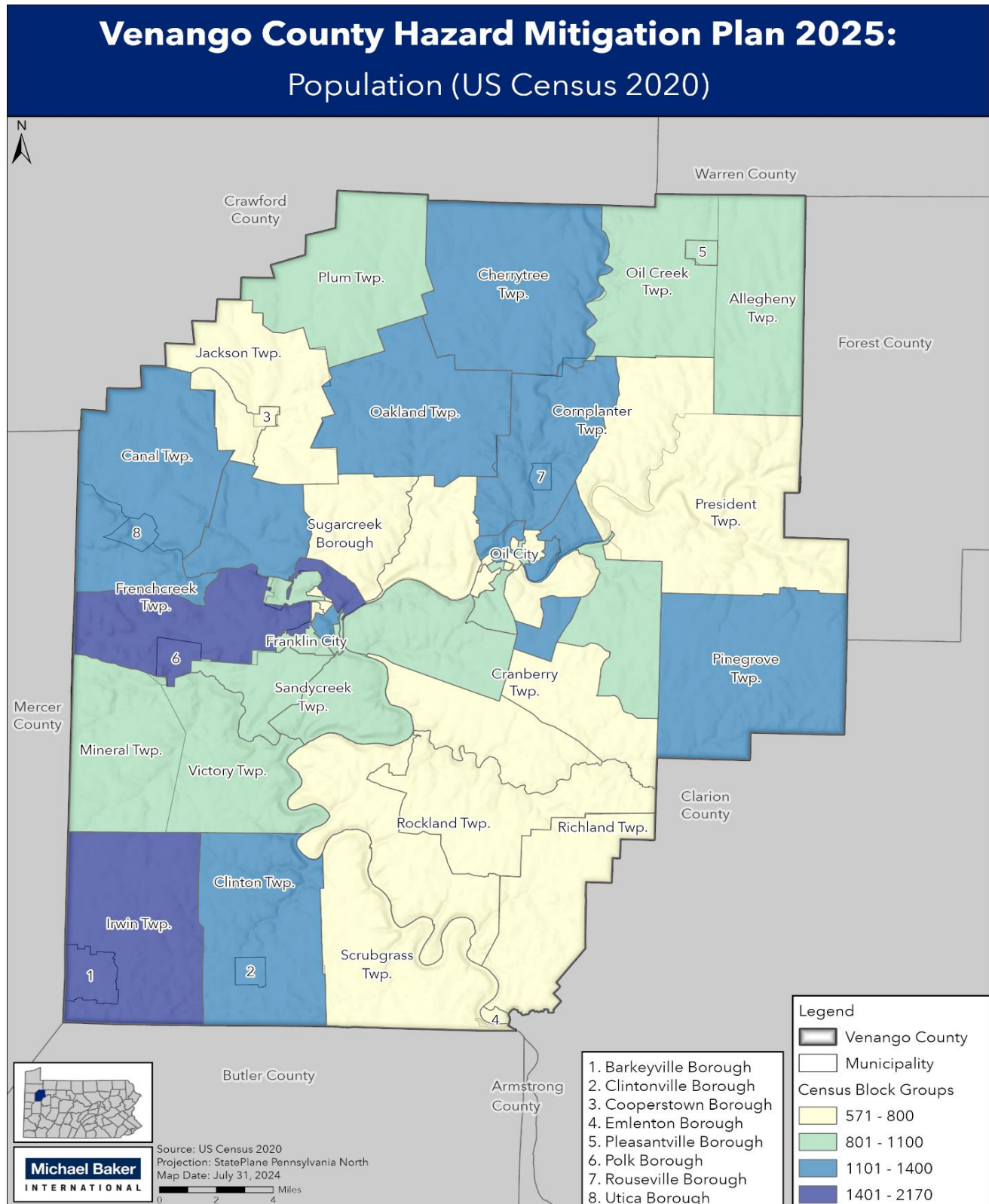
According to the 2022 estimate, of the 26,276 total housing units, 8,671 units (33%) were built in 1939 or earlier. The age of the housing stock should be considered when planning for hazard mitigation, especially urban fire and explosion.

Table 2.3-8: Year Structure Built

	Number of Structures	Percentage of Total Structures
Built 2020 or later	23	0.10%
Built 2010 to 2019	780	3.00%
Built 2000 to 2009	2,228	8.50%
Built 1990 to 1999	1,656	6.30%
Built 1980 to 1989	2,089	8.00%
Built 1970 to 1979	3,741	14.20%
Built 1960 to 1969	2,418	9.20%
Built 1950 to 1959	3,073	11.70%
Built 1940 to 1949	1,597	6.10%
Built 1939 or earlier	8,671	33.00%
Source: U.S. Census Bureau, ACS 2022 5-Year Estimates		

Figure 2.3.1 illustrates the population density per census block in Venango County. The center of the County, in and around the City of Franklin, contains some of the most densely populated census blocks in the county. Surrounding municipalities of Sugarcreek Borough and Sandycreek Borough are also some of the densest areas in the county.

Figure 2.3-1: Population Density



2.4. EQUITY IN HAZARD MITIGATION PLANNING

When planning for natural disasters or other hazardous events, accounting for underserved and socially vulnerable communities through an equitable approach is critical for minimizing negative impacts. Underserved communities refer to populations sharing a particular characteristic, as well as geographic communities that have historically been systematically denied a full opportunity to participate in aspects of economic, social and civic life. Social vulnerability is understood as the potential for loss within an individual or social group, recognizing that some characteristics influence an individual's or group's ability to prepare, respond, cope or recover from an event. These characteristics can overlap within populations to create heightened vulnerability, which may be compounded by infrastructure deficiencies within communities and historic or existing discriminatory government policies. Looking at these communities through an equitable approach consists of ensuring the fair and just distribution of resources, opportunities, and support tailored to meet the unique needs of different groups ensuring that everyone has the opportunity to thrive.

Venango County has census tracts that have low, medium, and high challenges. Overall, the County is in the 44th percentile for challenges according to FEMA's Community Resilience Challenges Index (CRCI). The CRCI uses the following 22 indicators:

Population

- o No High School Diploma
- o Age 65 or older
- o Disabilities

Household

- o No vehicle
- o Limited English
- o Single Parent Households
- o No Smartphone

Housing

- o Mobile Home Share
- o Owner-Occupied Housing

Healthcare

- o Number of Hospitals
- o Medical Professionals per 1,000

- o Population without Insurance

Economic

- o Unemployment
- o Income Inequality
- o Median Household Income
- o Unemployed Women
- o Population Below Poverty Level
- o Employment in Predominant Sector

Connection to Community

- o Inactive Voters
- o Civic and Social Organizations
- o No Religious Affiliation
- o Population Change

Figure 2.4-1: FEMA Community Resilience Challenges Index (CRCI) Census Tracts in Venango County (FEMA CRCI, 2024)

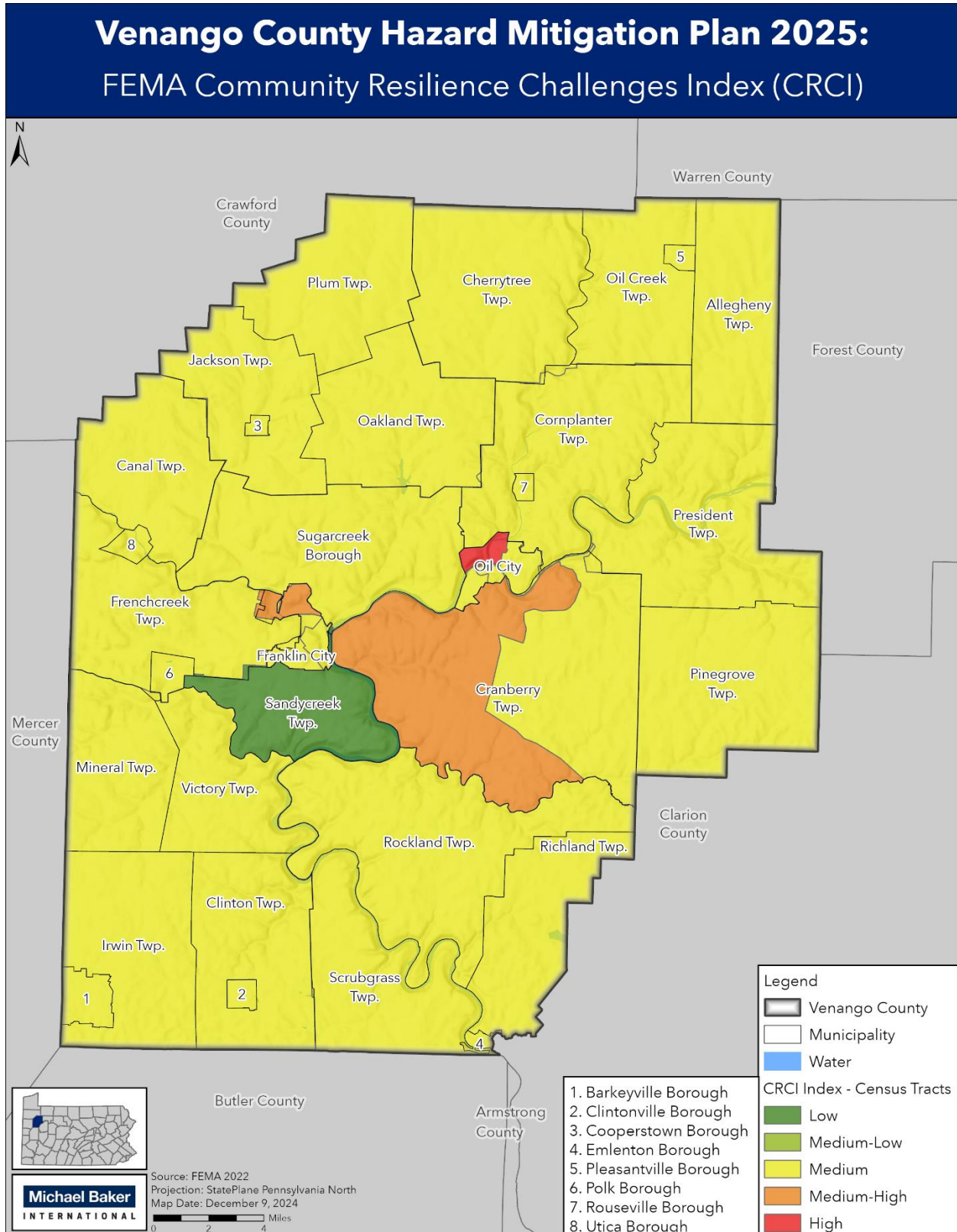


Table 2.4-1: Underserved and Socially Vulnerable Census

Census Tract	Municipality	Challenge Percentile	Indicators
Census Tract 201300, 200300	Franklin Cranberry Twp.	Medium-High, 70 th – 85 th	No High School Diploma, No Vehicle, Limited English, No Smartphone, Mobile Homes, Owner-Occupied Housing, Number of Hospitals, Medical Professionals, Health Insurance, Median Income, Inactive Voters, No Religious Affiliation
Census Tract 201100	Oil City	High, 85 th – 95 th	No Vehicle, Owner-Occupied Housing, Number of Hospitals, Medical Professionals, Poverty, Median Income, Unemployment, Predominant Sector Employment, Income Inequality, Inactive Voters, No Religious Affiliation

The map and table show the most vulnerable census tracts, but each census tract in the county has at least one of the 22 indicators in the CRCI. It is important for municipalities to be aware of and understand their vulnerable populations. In each hazard profile, municipalities with communities that may be particularly vulnerable to the hazard's impacts are identified.

Incorporating equity into mitigation plans ensures that these populations receive the attention and resources necessary to reduce their risk and enhance their resilience. This approach not only addresses existing social inequalities but also leads to more effective and sustainable disaster management outcomes, ensuring that all communities have the opportunity to thrive in the face of adversity.

To adequately target these underserved communities, targeted outreach was a fundamental part of the County's hazard mitigation plan. The plan's outreach plan ([Appendix H](#)) discusses the HMSC's work to identify underserved communities using local knowledge and tools. In addition to locating these communities, the HMSC met with organizations that represent and work with these communities to better understand the services they provide and the populations that utilize them. These organizations include UPMC Northwest, Pathways Adolescent Center, School Districts, and PA DOH. Equity tools published by FEMA simultaneously helped to corroborate findings from the outreach plan.

2.5. LAND USE AND DEVELOPMENT

The 2022 Census of Agriculture by the United States Department of Agriculture indicated that there were 329 farms in 2022 with an average size of 139 acres, down from 409 farms in 2017. In 2017, the total market value of agricultural products sold was \$13.8 million, down from \$14.7 million in 2017. About 12% of the land use in Venango County is Agriculture.

The 2024 Venango County Comprehensive plan noted important themes that were emphasized during the Community Meetings. These are issues and opportunities that were repeatedly mentioned and discussed in multiple ways during the meetings. One of the main themes was land use. Specifically, the balance of private and public land. The action item for

the County was to encourage no net loss of private land to public (state and federal) ownership.

Table 2.5-1: Agricultural Summary of Venango County

Number of Farms	329
Acreage of Farms	45,637
Total Acres Cropland	22,684
Average Per Farm Market Value of Agricultural Products Sold	\$41,949
Total Crop Revenue	\$9,294,000
Total Livestock, Poultry, and Products	\$4,507,000
Source: Agricultural Census, 2022	

Figure 2.5-1: Venango County Land Use Map

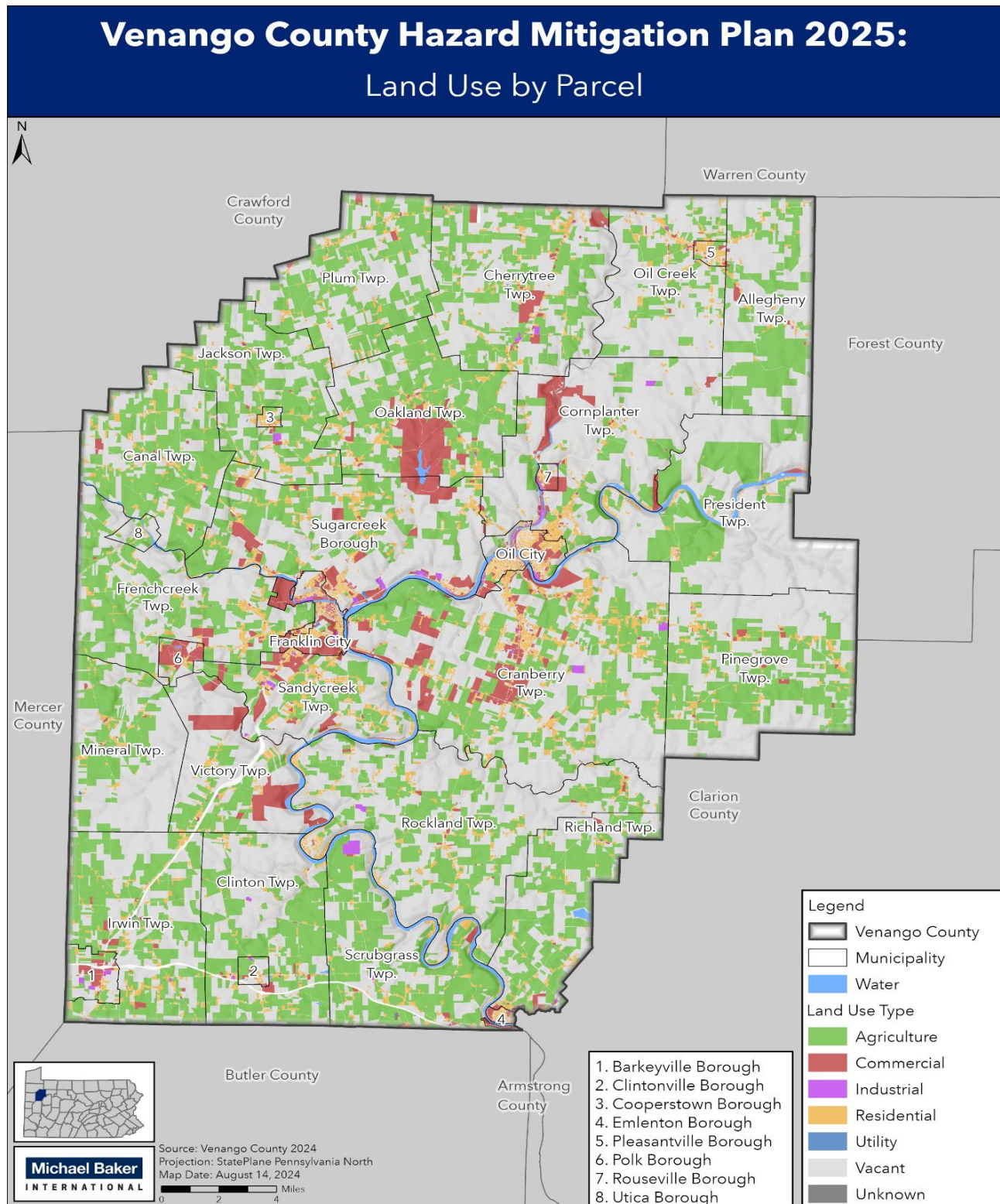
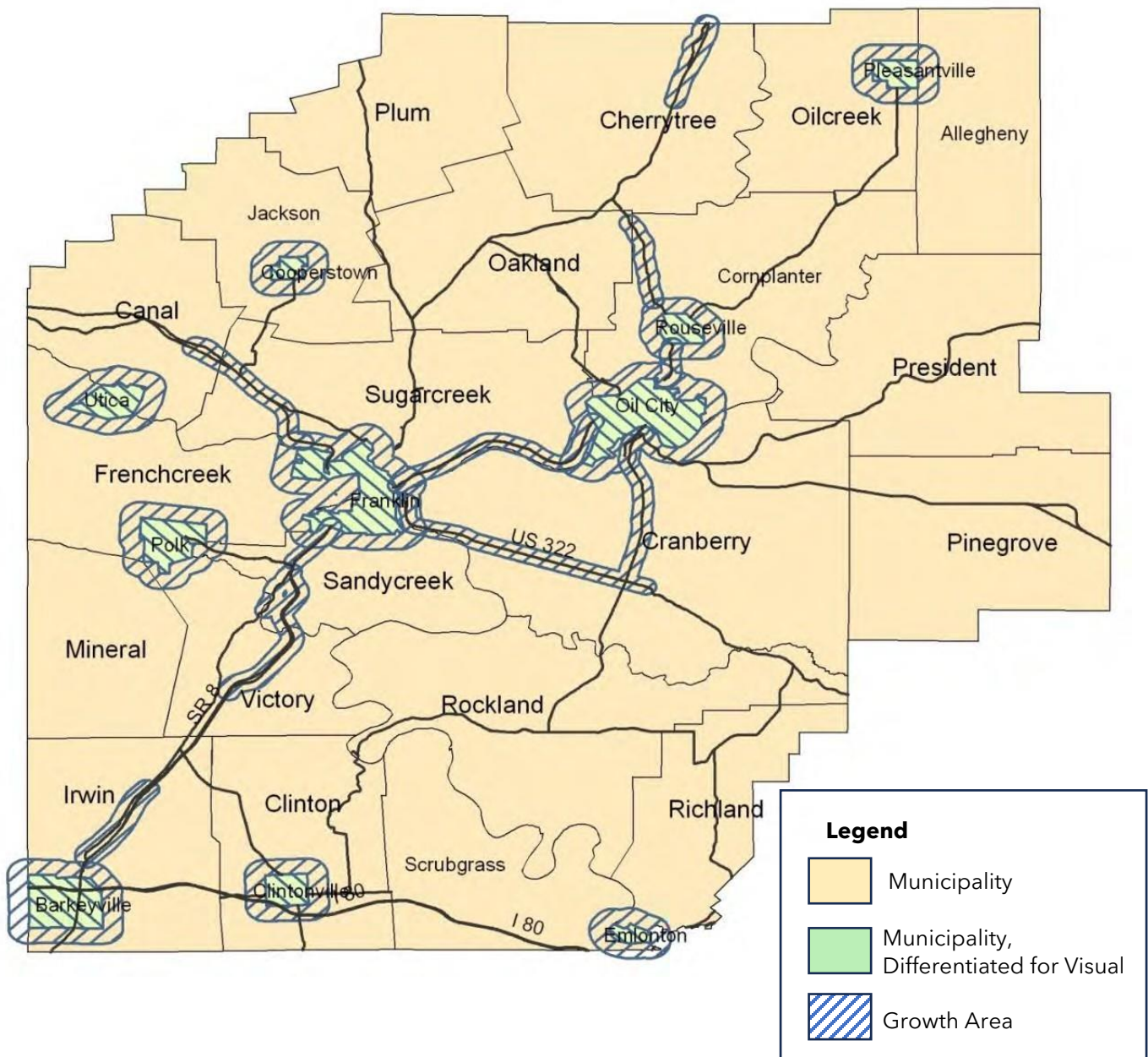


Figure 2.5-2: Venango County Growth Areas



2.6. DATA SOURCES AND LIMITATIONS

The Venango County (point data) and parcel (polygon layer) databases were used as an inventory of properties throughout the County. The buildings data did not include type or value. These property types were assigned a generalized land use code of agricultural, commercial, industrial, residential, transportation/utilities, and unknown (for parcels with no property type code). While this allows for generalized discussion of the type of buildings at risk in Venango County, the number of buildings by type used throughout this HMP should be considered estimates. The actual building and land use may differ than information contained in the database. The property type was used to extract numbers of mobile homes. The list of critical facilities provided in [Appendix E](#) was developed based on information provided by Venango County Planning Department, Venango County Emergency Services, PEMA, FEMA, the Pennsylvania Department of Health, and the National Atlas; selection of categories was led by the Venango County HMSC leadership.

Flood hazard data used in this plan is Venango County's effective DFIRM database from 2014, which is a digital representation of features of Flood Insurance Rate Maps (FIRMs). In addition, this plan makes use of the non-regulatory Risk MAP products produced for Venango County, namely the 1-percent annual chance depth grid. Venango County provided other GIS datasets including transportation infrastructure, boundaries, public buildings, and natural features like steep slopes and landslide prone areas. Additional data for the base map was provided by the Pennsylvania Department of Transportation, Pennsylvania Game Commission, Pennsylvania Department of Environmental Protection and the Pennsylvania Department of Conservation and Natural Resources.

Additional information used to complete the risk assessment for this plan was taken from various government agency and non-government agency sources. Those sources are cited where appropriate throughout the plan and on each map with full references listed in [Appendix A](#) – Bibliography. It should be noted that numerous GIS datasets were obtained from the Pennsylvania Spatial Data Access (PASDA) website (<http://www.pasda.psu.edu/>). PASDA is the official public access geospatial information clearinghouse for the Commonwealth of Pennsylvania. PASDA was developed by the Pennsylvania State University as a service to the citizens, governments, and businesses of the Commonwealth. PASDA is a cooperative project of the Governor's Office of Administration, Office for Information Technology, Geospatial Technologies Office and the Penn State Institutes of Energy and the Environment of the Pennsylvania State University. Spatial data for hazards also came from multiple federal agencies, such as National Oceanic and Atmospheric Administration (NOAA), National Interagency Fire Center (NIFC), United States Geological Survey (USGS), United States Forest Service (USFS), and the Environmental Protection Agency (EPA).

In order to assess the vulnerability of different jurisdictions to the hazards, data on past occurrences of damaging hazard events was gathered. For a number of historic natural-hazard events, the National Climatic Data Center (NCDC) database was utilized. NCDC is

a division of the US Department of Commerce's National Oceanic and Atmospheric Administration (NOAA). Information on hazard events is compiled by NCDC from data gathered by the National Weather Service (NWS), another division of NOAA. NCDC then presents it on their website in various formats. The data used for this plan came the US Storm Events database, which "documents the occurrence of storms and other significant intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce" (NOAA, 2006).

HAZUS-MH is a powerful risk assessment methodology for analyzing potential losses from floods, hurricane winds and earthquakes. In HAZUS-MH, current scientific and engineering knowledge is coupled with the latest GIS technology to produce estimates of hazard-related damage before, or after, a disaster occurs. HAZUS version 6.0 was used to estimate losses for floods in Venango County; this plan incorporates an enhanced analysis. County-specific essential facilities data was incorporated into the model to make it more precise. For more information on the enhanced analysis methodology used for this plan's flood model, please see [Appendix F](#).

Throughout the risk and vulnerability assessments included in [Section 4 - Risk Assessment](#), descriptions of data indicate some areas in which the County and municipalities can improve their ability to identify vulnerable structures and improve loss estimates. As the County and municipal governments work to increase their overall technical capacity and implement comprehensive planning goals, they will also attempt to improve the ability to identify areas of increased vulnerability.

The hazard mitigation plan takes assets into consideration. The plan describes the vulnerability of assets to the identified hazards and looks at the risk that makes them susceptible to damage from the identified hazards. Assets considered include:

- People (including underserved communities and socially vulnerable populations).
- Structures (including facilities, lifelines and critical infrastructure).
- Systems (including networks and capabilities).
- Natural, historic, and cultural resources.
- Activities that have value to the community.

Assets were identified in a couple of different ways. One method for asset identification was through looking at FEMA's community lifelines. FEMA community lifelines are essential services that enable the continuous operation of critical government and business functions, which are crucial for human health, safety, and well-being. These lifelines, which are listed below, form the backbone of a community's resilience to disasters. Additionally, Community lifelines will serve as a focal point for assessing vulnerabilities and implementing strategies to minimize disruptions.

Figure 2.6-1: Community Lifelines

 Safety and Security Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	 Food, Hydration, Shelter Food, Hydration, Shelter, Agriculture	 Health and Medical Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	 Energy (Power & Fuel) Power Grid, Fuel
 Communications Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	 Transportation Highway/Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	 Hazardous Materials Facilities, HAZMAT, Pollutants, Contaminants	 Water Systems Potable Water Infrastructure, Wastewater Management

This 2025 HMP Update also evaluates the vulnerability of the County's critical facilities. For the purposes of this plan, critical facilities are those entities that are essential to the health and welfare of the community. Due to the volume of oil and gas wells in the County, the vulnerability of these facilities is analyzed independent of the other critical facilities.

Table 2.6-1 summarizes the critical facilities in Venango County by type and data source. Table 2.6-2 provides a list of critical facility types with definitions. Table 2.6-3 summarizes critical facilities by municipality and type. For a complete listing of critical facilities and their vulnerability to individual hazards, please see [Appendix E](#).

This HMP evaluates the vulnerability of the County's critical facilities. For the purposes of this plan, critical facilities are those entities that are essential to the health and welfare of the community. Table 2.5-1 summarizes the critical facilities in Venango County by type and by municipality. For a complete listing of critical facilities and their vulnerability to individual hazards, please see [Appendix E](#).

Types of Critical Facilities in Venango County

Type	Definition	Why It Is Critical
Airports	A place from which aircraft operate that usually has paved runways and maintenance facilities and often serves as a terminal.	Important for the movement of people and goods and services.
Cell Towers	A vertical structure, often a tower, that houses antennas and equipment to transmit and receive radio signals, enabling cellular network connectivity for mobile device.	Important infrastructure, transmitting and receiving signals between mobile phones and the cellular network. In areas with limited or no service coverage, organizations and populations utilize portable cellular systems that act like stationary cell towers to establish a cellular communication link.
County Buildings	Services provided by the government to its citizens, encompassing functions like public safety, education, healthcare, and infrastructure.	Ensure the well-being and security of the community.
Dams	A barrier that stops or restricts the flow of surface water or underground streams.	Important infrastructure, providing flood protection, water supply reservoirs, hydroelectric power, and irrigation. Their failure may result in significant damage and loss of life.
Day Care Centers	An institution that provides supervision and care of infants and young children during the daytime.	Necessary for a community's economy by providing employment and for the day-to-day life for many families by providing care for children while parents go to work.
Emergency Operations Centers	A facility where emergency medical service (EMS) personnel are stationed or based out of, or where equipment that such personnel use in carrying out their jobs is stored for ready use.	Important for the storage and maintenance of EMS equipment.
Fire Stations	A facility where fire engines and other equipment of a fire department are housed.	Important for the storage and maintenance of firefighting equipment.
Medical Facilities	A place where sick or injured people are given care or treatment (as a hospital, urgent care center, or a clinic).	Buildings where people may be present 24/7, provide important care services, and may serve as a local shelter.
Municipal Buildings	Facilities that do not fit within the other categories on this list, but are important to the communities in the county.	Communities may have assets that are vital to their community that do not fit cleanly into any of the other categories. It is important to assess their risk and consider them in this planning process.
Nursing Homes	A facility licensed by the department or the Department of Human Services, including, but not limited to, a long-term care nursing facility, a skilled nursing facility, an assisted living facility, a personal care home, an independent long-term care facility or an intermediate care facility for individuals with intellectual disabilities.	Provide safety and shelter for vulnerable populations, especially those that require 24/7 care and monitoring.

Types of Critical Facilities in Venango County

Type	Definition	Why It Is Critical
Police Stations	w	Important for the storage and maintenance of emergency response equipment.
Private Schools	A school supported by a private organization or private individuals rather than by the government.	Buildings where many people and young vulnerable populations are present during the day, may also serve as a local shelter.
Public Schools	A school supported by public funds.	Buildings where many people and young vulnerable populations are present during the day, may also serve as a local shelter.

Table 2.6-1: Venango County Critical Facilities by Municipality and Type

Municipality	Airport	Cell Towers	County Buildings	Day Care Centers	Emergency Operations Centers	Fire Stations	Hospitals/ Ambulance e/EMS	Municipal Buildings	Nursing Homes	Police Stations	Schools	Total
Allegheny Township	0	0	0	0	0	0	0	1	0	0	0	1
Barkeyville Borough	0	0	0	0	0	0	0	1	0	0	0	1
Canal Township	1	0	0	0	0	1	0	1	0	0	0	3
Cherrytree Township	1	0	0	1	0	1	0	1	1	0	0	5
Clinton Township	0	2	0	0	0	0	0	1	0	0	1	4
Clintonville Borough	0	0	0	0	0	1	0	1	0	0	0	2
Cooperstown Borough	0	0	0	0	0	1	0	1	0	0	0	2
Cornplanter Township	0	1	0	1	1	1	0	1	1	0	1	7
Cranberry Township	3	6	0	1	0	1	2	0	0	1	4	18

Table 2.6-1: Venango County Critical Facilities by Municipality and Type

Municipality	Airport	Cell Towers	County Buildings	Day Care Centers	Emergency Operations Centers	Fire Stations	Hospitals/ Ambulance e/EMS	Municipal Buildings	Nursing Homes	Police Stations	Schools	Total
Emlenton Borough	0	0	0	1	0	1	0	1	0	1	0	4
Franklin City, City of	1	0	4	4	0	2	1	13	4	2	2	33
Frenchcreek Township	0	0	0	0	0	0	0	4	0	0	0	4
Irwin Township	0	1	0	0	0	0	0	2	0	0	2	5
Jackson Township	0	0	0	0	0	0	0	3	0	0	0	3
Mineral Township	0	0	0	0	0	0	0	1	0	0	0	1
Oakland Township	1	0	0	0	0	0	0	1	0	0	0	2
Oil City, City of	0	0	0	4	0	2	1	1	1	1	8	18
Oil Creek Township	0	0	0	0	0	0	0	1	0	0	0	1
Pinegrove Township	1	0	0	0	0	1	0	2	0	0	1	5
Pleasantville Borough	0	0	0	0	0	1	0	1	0	0	1	3
Plum Township	0	0	0	0	0	0	0	1	0	0	0	1
Polk Borough	0	0	0	0	0	1	0	1	3	1	0	6
President Township	0	0	0	0	0	1	0	1	0	0	0	2
Richland Township	0	0	0	0	0	0	0	3	0	0	0	3
Rockland Township	0	1	0	0	0	1	0	3	0	0	0	5
Rouseville Borough	0	0	0	0	0	0	0	1	0	0	0	1
Sandycreek Township	1	0	0	0	0	1	0	1	0	0	3	6
Scrubgrass Township	0	1	0	0	0	0	0	1	0	0	0	2
Sugarcreek Borough	0	0	0	1	0	2	2	5	1	1	2	14

Table 2.6-1: Venango County Critical Facilities by Municipality and Type

Municipality	Airport	Cell Towers	County Buildings	Day Care Centers	Emergency Operations Centers	Fire Stations	Hospitals/ Ambulance e/EMS	Municipal Buildings	Nursing Homes	Police Stations	Schools	Total
Utica Borough	0	0	0	0	0	1	0	1	0	0	1	3
Victory Township	0	0	0	0	0	0	0	1	0	0	0	1
Total	10	6	4	13	1	20	6	58	12	7	26	163

3. PLANNING PROCESS

3.1. UPDATE PROCESS AND PARTICIPATION SUMMARY

Michael Baker International was responsible for preparing the County’s 2015 HMP, which was adopted on April 12th, 2016. The HMP was then updated and adopted for implementation in 2022. The 2015 and 2022 Plans and this updated 2025 Venango County Plan Update represent the work of many collaborators in developing a blueprint for protecting community assets, preserving the economic viability of the community, and saving lives.

This 2025 HMP update was funded by a FEMA grant. The current update to the 2022 Plan was initiated in May 2024. The 2025 effort was led by the Venango County Department of Emergency Services (DES) with the Venango County Regional Planning Commission in partnership with the Hazard Mitigation Planning Team (HMPT). Michael Baker International assisted the County and its municipalities throughout the update process.

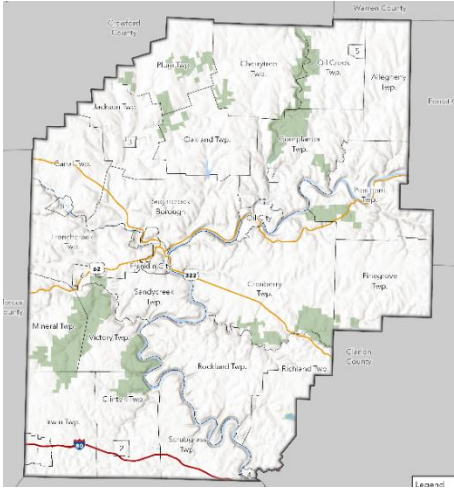
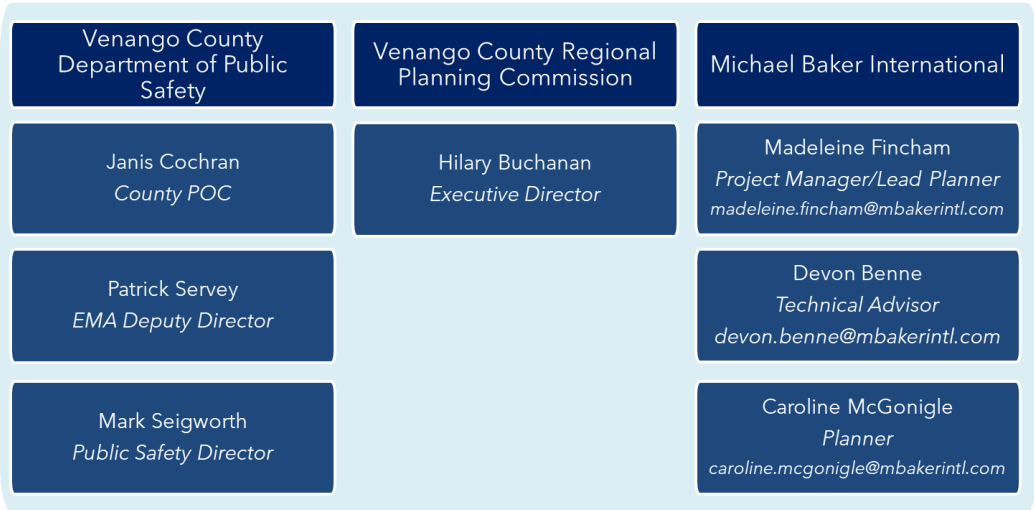


Figure 3.1-1 Map of Venango Map

The Venango County HMSC (Figure 3.1-1), consisting of Venango County DES and Venango County Regional Planning Commission, was responsible for the development of 2025 HMP Update in partnership with the Hazard Mitigation Planning Team (HMPT) that included representatives from the Venango County municipalities and other local and regional stakeholders.

Figure 3.1-1: Venango County HMSC



Specifically, the 2025 HMPT included stakeholders from the groups listed in Figure 3.1-1. A full list of stakeholders invited to participate is included in [Appendix C – Meeting and Other Participation Documentation](#). The contact list in [Appendix C](#) specifies which stakeholder category (1 through 5 listed in Figure 3.1-2) each contact falls within.

Figure 3.1-2: Venango County HMP Stakeholder Types

Local and regional agencies involved in hazard mitigation activities.*	Examples include public works, emergency management, local floodplain administration and Geographic Information Systems (GIS) departments.
Agencies that have the authority to regulate development.	Examples include zoning, planning, community and economic development departments; building officials; planning commissions; or other elected officials.
Neighboring communities.	Examples include adjacent local governments, including special districts, such as those that are affected by similar hazard events, contain critical assets, or share a mitigation action or project that crosses boundaries.
Representatives of businesses, academia, and other private organizations.	Examples include private utilities or major employers that sustain community lifelines.
Representatives of nonprofit organizations.	Examples include housing, healthcare, or social services agencies.

*Includes participating jurisdictions and additional stakeholders.

All 31 municipalities in Venango County were considered in the vulnerability assessment and the development of the Mitigation Strategy to address vulnerabilities. Details on the members of the HMSC and HMPT are included in [Section 3.2 – The Planning Team](#).

To begin this process, DES and the Planning Commission hosted an internal kick-off meeting with the contract support to begin the update process on May 14, 2024. During this meeting, attendees reviewed the Hazard Mitigation Planning process, as well as changes to that process promoted by FEMA’s updated Local Mitigation Planning Policy Guide. Additionally, the attendees discussed the scheduling of HMSC, HMPT and public meetings and participation for the 2025 update process. Details on this and other meetings are included in [Section 3.3 – Meetings and Documentation](#).

Detailed information about stakeholder participation is included in [Section 3.4 – Public & Stakeholder Participation](#). The municipal involvement in developing the 2025 HMP Update is detailed in [Section 3.5 – Multi-Jurisdictional Planning](#).

The HMSC used a number of worksheets to gather information from each municipality and participant in the planning process. These worksheets were designed to gather information about the hazards that affected the entire County, and how those hazards affected each of the municipalities, as well as information about the Mitigation Strategy. The use of these forms is detailed in [Section 3.3 – Meetings and Documentation](#) and the submitted forms are included in [Appendix C – Meeting and Other Participation Documentation](#).

To clearly identify and document an approach for the planning process, the Venango County 2025 HMP Update Stakeholder Outreach and Engagement Strategy was developed. This strategy established methods for ongoing opportunities for input, collaboration, and feedback during the HMP update. There are two main sections of the strategy. The Plan Participant Identification section focuses on target audiences, HMSC roles and responsibilities, building the HMPT, public involvement and identifying and including underserved communities. The Outreach and Engagement Methods section focuses on key meetings and touchpoints and leveraging different outreach tools. This strategy can be referenced in [Appendix H – Outreach and Engagement Plan](#).

The Outreach and Engagement Plan is new to the 2025 planning process and it significantly informed how outreach was approached. The planning team focused a considerable amount of time on implementing the Outreach and Engagement Plan throughout the planning process, including meeting with each community about their risks, discussing how they would like to mitigate those risks, reviewing their critical facilities, documenting community lifelines, and gaining buy-in for adoption. More details on how the Outreach and Engagement Plan were implemented through the planning process are documented in [Section 3.2 – The Planning Team](#), [Section 3.3 – Meetings and Documentation](#), [Section 3.4 – Public & Stakeholder Participation](#), [Section 3.5 – Multi-Jurisdictional Planning](#) and [Appendix C – Meeting and Other Participation Documentation](#).

3.2. THE PLANNING TEAM

The HMPT assembled for the 2025 HMP included representatives from Venango County, the Venango County municipalities, and additional stakeholders representing the groups identified in Figure 3.1-1. The HMSC was assembled to guide the overall direction of the HMP Update and make day-to-day decisions pertaining to its completion in conjunction with the Michael Baker consultant team.

Figure 3.1-1 details the members of the 2025 HMSC. This steering committee follows a similar structure to that established for the 2020 update. The primary roles of the HMSC included providing outreach and coordination among participating jurisdictions, working with communities to identify local risks and vulnerabilities, collecting information on community assets, determining capability updates, and providing technical expertise and mitigation action development. In order to represent the diverse

stakeholders in the County, the HMSC developed a list of HMPT members. The stakeholders listed in Table 3.2-1 served on the HMPT and actively participated in the planning process through attendance at meetings, completion of assessment surveys, or submission of comments. Participants representing multiple jurisdictions are listed more than once.

Table 3.2-1: 2025 Venango County HMPT Participants	
Agency	Participant(s) and Title, if Available
Municipalities	
Allegheny Township	Doug Cole, Chairman
Barkeyville Borough	Warren Wetzel, Supervisor/LEMC; Cindy McFeaters, Secretary
Canal Township	Teresa Hollabough, Secretary/Treasurer
Cherrytree Township	Christine C. Kurelowech, Secretary/Treasurer
Clinton Township	Ben Porter, Supervisor
Clintonville Borough	Megan Weber, Mayor/LEMC
Cooperstown Borough	Mike Meyer, Supervisor; Brenda Schwab, Supervisor; Bonnie Tologo, Supervisor; John Eltz, Supervisor
Cornplanter Township	Eric Davison, Supervisor; Richard Balas, Supervisor; Steven Hinds, LEMC; Tanner Malek, EMA
Cranberry Township	Regina DeLoe, Zoning/Code Enforcement Officer; Sabrina Backer, Township Manager
Emlenton Borough	Carol Wilson, Secretary
Franklin, City of	Amanda Power, Community and Economic Development Director; Andrew Eckel, Fire Chief; Charles Gibbons, Code Enforcement; Jim Wetzel, City Manager; Kevin Saragain, Police
Frenchcreek Township	Bob Jamison, Zoning and Code Enforcement Officer/ Emergency Management Coordinator
Irwin Township	Barb Sopher, Secretary; Gerry Rea, LEMC
Jackson Township	Ken Volk, Township Supervisor
Mineral Township	Fred Krizinsky, Roadmaster
Oakland Township	Chris Weber, LEMC; Kimberly Scott, Manager/Secretary
Oil City, City of	Michelle Hoover, Asst. City Manager/Finance Officer; Tim Alex, Fire Chief; Travis Hartman, Code/Zoning
Oil Creek Township	Kieth Armstrong, Supervisor
Pinegrove Township	Charlie Lam, Roads Supervisor; Katie Sottiaux, Secretary/Treasurer
Pleasantville Borough	Mary Long, Vice President; Jeff Presto, Chief PVFD

Table 3.2-1: 2025 Venango County HMPT Participants	
Agency	Participant(s) and Title, if Available
Plum Township	Dale McGinnis, Supervisors/Council Members; Lee Dosch, Supervisors/Council Members; Steven Sterling, Supervisors/Council Members
Polk Borough	Edward Sharp, Code Enforcement; Jim Millek, Council
President Township	Frank Machokas, LEMC
Richland Township	Thomas Best, Supervisor; Bill Ritchey, Supervisor; Amanda Ruckdeschel - Secretary; Dave Whitehill, Chairman
Rockland Township	Terry Hunsberger, Vice-Chairman; Chuck Vernma, Chairman; Zachary Jones, Supervisor; Nicole Jones, Secretary/Treasurer
Rouseville Borough	Guy Milliron, Mayor
Sandycreek Township	Bob Jamieson, LEMC/Zoning and Code Enforcement Officer
Scrubgrass Township	Bob Aiken, Supervisor; Brian Flinspach, Supervisor
Sugarcreek Borough	Bob McClintock, EMA; Larry Moyer, Zoning Officer
Utica Borough	Marian Murphy, Secretary/Treasurer; Erin McLean, Borough Council
Victory Township	William Rial, Township Supervisor
Other Stakeholders	
Clarion County	Brett Whitling
Cranberry Township Area School District	Bill Vonda
DCNR - Bureau of Forestry	Cecile Stelter
DCNR - Bureau of Forestry	Quinten Dabbs
DCNR - Bureau of Forestry	Zach St. Laurent
Forest County Conservation District and Planning Dept	Don Mason
Franklin Area School District	Geno Thomas
Mercer County DPS	Frank Janetti
National Fuel Gas	Scott Kerr
Oil Region Alliance	Mark Kerr
PA Department of Environmental Protection (DEP)	Dustin Wyant
PA Department of Environmental Protection (DEP)	Justin Rogers

Table 3.2-1: 2025 Venango County HMPT Participants	
Agency	Participant(s) and Title, if Available
PA Department of Housing (DOH)	Gary Knox
Pathways Adolescent Center	William Woods
PennDOT	Blaise Bucha
The Derrick	Kara O'Neil
United Way	Will Price
UPMC Northwest	Russ Carlson
Valley Grove School District	Kevin Briggs
Venango County Regional Planning Commission	Hilary Buchanan
Venango County Department of Public Safety	Janis Cochran
Venango County Department of Public Safety	Patrick Servey
Venango County Conservation District	Bailey Kozalla
Venango County Conservation District	Lisette Lane
Venango County Human Services	Ashley Nichols
Venango County Human Services	Justin Heffernan
Venango County Regional Planning Commission	Alex Shreffler

3.3. MEETINGS AND DOCUMENTATION

The following meetings were held during the HMP Update process. Materials developed and shared for these meetings are included in [z and Other Participation Documentation](#).

May 6, 2024 - FEMA/PEMA County Kickoff: A meeting was held prior to the HMSC kickoff to review expectations for the 2025 HMP Update, as well as an opportunity for the County to ask PEMA and FEMA questions on updated requirements. FEMA shared classes have been held with Counties and their municipalities to go through the HMP process step-by-step, allowing questions to come directly from municipalities, as well as lessons learned. Venango County, PEMA, and FEMA noted this as a future due-out. Updated requirements discussed in detail the high hazard potential dam (HHPD)

analysis, equity planning to represent vulnerable and underserved communities, and the potential affects of climate patterns on future hazard conditions.

May 14, 2024 – HMSC Kick-Off Meeting*: This meeting was held virtually and was attended by County representatives and the consultant to go over the planning process and major milestones including the schedule for HMPT meetings and anticipated HMP submission dates. The group also discussed planning requirements, relevant stakeholders, and the availability of geospatial data and other plans and documents for integration.

May 20, 2024 – Local Emergency Planning Committee (LEPC) Meeting: Prior to the HMPT kickoff, a smaller meeting was held with the LEPC. Those new to the HMP planning process were informed of the plan components and its importance to reduce or eliminate risk to the communities. In addition, the LEPC was encouraged to participate to bring the perspective of their services and responsibilities to the community. Specifically, those who are involved in hazard mitigation activities, have authority to regulate development, neighboring communities, businesses and academia, and non-profit organizations who work directly with or support underserved communities and socially vulnerable populations.

June 18, 2024 – HMPT Kick-Off Meetings (one virtual, one hybrid): The morning meeting was held in person, and the virtual meeting was held in the evening to accommodate schedules and provide additional opportunity for participation. The meetings included discussion of project scope, schedule, the planning process, participation and engagement, and next steps. Roles and responsibilities, the planning process and community engagement were discussed. Email and mail invitations were sent to each Venango County municipality, as well as other stakeholders spanning the five different types of required stakeholders (see Figure 3.1-2). Meeting attendees were asked to begin completing project forms, check out the project website and provide contact information for other stakeholders that should be included in the planning process.

August through October 2024 – Risk Assessment Meetings: Meetings were held on a small group basis with participating jurisdictions. Some meetings were held one-on-one with municipalities and others with a group to accommodate schedules. These meetings were an opportunity to discuss local hazard risk and vulnerability, and to look at critical facilities and assets. These meetings were leveraged to help jurisdictions meet the minimum plan participation requirements of attending at least one meeting and completing at least one form. Table 3.3-1 details on the meetings held.

Table 3.3-1: Risk Assessment Meetings		
Meeting	Date	Delivery
Cooperstown Borough	August 5, 2024	Virtual
Rouseville Borough	August 20, 2024	Virtual

Table 3.3-1: Risk Assessment Meetings		
Meeting	Date	Delivery
Clinton Township, Jackson Township, Richland Township, City of Franklin	August 23, 2024	Virtual
Pinegrove Township	August 28, 2024	Virtual
Sugarcreek Borough, Clintonville Borough	August 30, 2024	Virtual
Canal Township, Oakland Township	September 18, 2024	Virtual
Cherrytree and Rockland	September 19, 2024	Virtual
Cranberry Township, Utica Borough, Sandycreek Township, Emlenton Borough, Cornplanter Township	September 20, 2024	Virtual

November 20, 2024 – Mitigation Solutions and Capability Assessment Meetings (one virtual, one in-person): The successful offerings of a morning in person session, and a virtual meeting in the evening at the kickoff was replicated for the mitigation solutions and capability assessment meeting. These meetings provided a collaborative space for the HMPT to develop the Mitigation Strategy and review capabilities such collectively identifying and reviewing relevant plans, policies, and programs already in place. These can be leveraged or built upon in the mitigation strategy. There was also the opportunity to discuss mitigation priorities and identify mitigation actions.

December 18, 2024 – HMSC Meeting (virtual): This meeting was held virtually and attended by County representatives and the consultant to discuss the Mitigation Strategy. The HMSC talked about what should be included in the Capability Assessment that is new since 2020, they also reviewed the Mitigation Action Review Form for the County, discussed new actions and discussed updates to the goals. Lastly, the consultant team provided the municipality participation status and suggested potential dates for the draft HMP presentation.

January 9, 2025 – Draft Plan Review Public Meetings (one virtual, one in-person)*:

Draft presentations were held in person and virtually to provide an opportunity for the public to review information on the plan, ask questions, and provide feedback. Resources were provided that detail the hazard mitigation planning process, information on the current update, the schedule for upcoming Draft Plan



Figure 3.3-1 Draft Plan Review Meeting Flyer

Review meetings, and more. Members of the HMSC were in attendance to field questions and engage in discussions. The Draft presentation was advertised on the project website, and by conducting outreach to municipalities to print or post a flyer on their local websites and social media websites. The flyer included a QR code for the public and agencies to easily access the project website and 2025 HMP draft for comment. Figure 3.3-1 shows the flyer used to advertise the open house.

February 14 through March 14, 2025 – Public Review*: The draft 2025 HMP Update was posted to the project website on February 14, 2025 so the public could obtain information about the draft, review the HMP, and ask questions or provide comments and feedback. The availability of planning materials and Draft HMP review were advertised on the project website. An email was also sent to those who provided their email address when completing the public survey, municipal leaders, and Venango County Stakeholders. A question/comment form was available.

Cherrytree Township and Cranberry Township municipal leaders left comments on the public review draft and those edits have been made. It was noted in the public review process that UPMC stakeholders wish to be more actively engaged in the next planning process.

3.4. PUBLIC & STAKEHOLDER PARTICIPATION

Stakeholders and the public were given multiple opportunities to participate in the HMP Update process through invitation to above outlined meetings (the public was invited to meetings with an asterisk (*)), review of risk assessment results and mitigation actions, and an opportunity to comment on a final draft of the 2025 HMP Update. Opportunities open to the public were advertised on the project website, on the county website, and through municipal social media accounts. The tools listed below were available on the HMP Update website to solicit information, data, and comments from both local municipalities, other key stakeholders the public in Venango County. These forms were also distributed in-person at the HMPT meetings identified and by email correspondence at different touchpoints throughout the planning process. Responses to these worksheets and surveys are included in [Appendix C – Meeting and Other Participation Documentation](#). Information provided in these forms were also thoroughly incorporated throughout the plan. The sections they informed are outlined in the descriptions below.

- **Evaluation of Identified Hazards and Risk Worksheet:** Collects information from the HMPT regarding whether there have been changes to the frequency of occurrence, magnitude of impact, or geographic extent of hazards identified in the 2020 Plan. In addition, the form asks members of the HMPT to identify any additional hazards they believe should be considered in the 2025 Plan. This form informed [Section 4 – Risk Assessment](#).

- **Critical Facilities Review Worksheet:** Provides an opportunity for municipalities to review the critical facilities identified in their community. Critical facilities were initially collected from state and national datasets. This worksheet allowed for more local and accurate input. This form informed [Section 4 – Risk Assessment](#), [Section 6 – Mitigation Strategy](#), and [Appendix E – Critical Facilities](#).
- **Community Lifelines Form:** Collects information on the FEMA Community Lifelines in the county. Communities list assets in their community that fall within the different lifeline categories. This form supported [Section 4 – Risk Assessment](#), [Section 6 – Mitigation Strategy](#) and [Appendix E – Critical Facilities](#).
- **Capability Assessment Survey:** Collects information on local planning, regulatory, administrative, technical, fiscal, political, and resiliency capabilities that can be included in the plan’s Capability Assessment section. This form informed [Section 5 – Capability Assessment](#).
- **NFIP Survey:** Collects information related to community capabilities towards aspects of the NFIP. This form informed [Section 5 – Capability Assessment](#).
- **Mitigation Action Progress Form:** This form is specific to each jurisdiction and includes all actions for that jurisdiction in the 2020 HMP. Space is provided to note the current status of each action and to document any progress made. This form informed [Section 6 – Mitigation Strategy](#).
- **New Mitigation Action Form:** Allows communities to propose new mitigation actions for the HMP Update. This form collects details about the action, including priority, responsible parties, potential funding sources, implementation timeframe, and more. This form informed [Section 6 – Mitigation Strategy](#).
- **Plan Comment Form:** Provides an opportunity for communities and the public to comment on the plan during the review period.



Figure 3.4-1 Public Survey Announcement on Facebook Meeting Flyer

Community participation and comment was encouraged throughout the planning process, particularly through the project website:

<https://www.pennsylvaniiahmp.com/venango-hmp>. This site was created and made publicly available at the beginning of the planning process and acted as a repository for the entire planning process. The website houses presentations, agendas, minutes, and worksheets from each meeting as well as promulgated meeting dates and important announcements. Since the site was published in May 2024, it has received a total of over 500 pageviews and 80 responses. The HMSC also

developed a Community Hazard Mitigation Survey intended to solicit public input

regarding the understanding of hazard risk, which was posted to the website, and was also shared with communities to post to their social media accounts. See Figure 3.4-1 for an example Facebook post from the Venango County Conservation District.

The planning process actively involved stakeholders and neighboring communities through a comprehensive outreach strategy designed to encourage participation and gather valuable input. Beyond traditional methods such as surveys, public meetings, social media engagement, and comment opportunities, the planning team utilized newspapers to publish information twice, ensuring broad awareness among residents. Coordination extended beyond local boundaries, fostering communication with neighboring counties to address regional concerns. A QR code was posted on the HMP website and sent out to stakeholders to facilitate easy access to surveys and meeting details, enhancing accessibility for participants. Additionally, discussions were held with HHPD dam owners to assess potential hazards, incorporating their insights into the planning framework. These combined efforts ensured a well-rounded and inclusive approach to community engagement, strengthening the overall effectiveness of the planning process.

Venango County posted the 2025 draft HMP Update on the project website for review and comment on February 14, 2025 for a 30-day comment period. The invitation to the public to review and comment on the draft plan was posted on the project website and was emailed to local officials with a flyer to share with the public advertising the Draft Plan Review Meetings (Figure 3.4-1). An email was also sent to members of the public who completed the Public Survey and provided their email address in their response (about 85 people).

Public Participation Survey:

As part of our ongoing efforts to enhance community resilience and safety, we invite you to participate in this important survey for our Hazard Mitigation Plan. Your input is invaluable in helping us identify and prioritize potential hazards, understand community vulnerabilities, and develop strategies to mitigate risks effectively. By completing this survey, you contribute directly to shaping policies and actions that will safeguard our community against natural and man-made hazards. Your time and insights are greatly appreciated.



Public Participation Survey

Figure 3.4-2: Public Participation Survey QR Code From HMP Website

Venango County Hazard Mitigation Plan Review 2025

Formal Newspaper Notice:

Notice is hereby given that Venango County Emergency Services is in the process of updating the Venango County Hazard Mitigation Plan. The Venango County Hazard Mitigation Plan describes and assesses local hazards and risks and identifies actions that can be taken to reduce community risk and impacts. This Plan serves as a blueprint for reducing property damage and saving lives from the effects of future disasters in our community. The County and your Municipality's participation is required to be eligible to receive certain types of state and federal disaster relief funds after a disaster occurs. The County encourages residents to take a quick, ten-minute Community Hazard Mitigation Survey located on the project website (<https://www.pennsylvaniiahmp.com/venango-hmp>). Questions may be directed to Janis Cochran, or Caroline McGonigle, Mitigation Planner at caroline.mcgonigle@mbakerintl.com/412-269-6079

About the project

The Venango County Department of Public Safety, in coordination with the Venango County Planning Commission, is in the process of updating the Venango County Hazard Mitigation Plan (HMP). The multi-jurisdictional HMP must be updated every five years, and the current plan will expire in January 2025. The County and your Municipality's participation is required to be eligible to receive certain types of state and federal disaster relief funds after a disaster occurs.

In continuation of the planning process, the Risk Assessment and Mitigation Solutions workshop is being held on November 20th, 2024. To ensure that everyone can participate in the next step of the process, the Risk Assessment and Mitigation Solutions Workshop will be held (over two sessions – morning and evening) on November 20th. The material covered at each session will be identical, and communities only need to attend one session. At the meeting, we will discuss the hazards profiled in the Venango County HMP as well as provide an overview of the Local Hazard Mitigation Planning process. Communities may choose between an AM or PM session. The morning session will be held in-person, and the evening session will be held virtually to accommodate stakeholder schedules. The material covered at each session will be identical, and communities need only attend one session.

As part of our ongoing efforts to enhance community resilience and safety, we invite you to participate in the public participation survey on the Venango County HMP project website. Your input is invaluable in helping us identify and prioritize potential hazards, understand community vulnerabilities, and develop strategies to mitigate risks effectively. By completing this survey,

Figure 3.4-3: Formal Newspaper Notice Blurb

Comments were to be submitted via the online comment form or in writing to the Venango County EMS and Venango County Regional Planning Commission and/or to Caroline McGonigle of Michael Baker International by mail or email. Copies of all comments received are located in [Appendix C – Meeting and Other Participation Documentation](#).

3.5. MULTI-JURISDICTIONAL PLANNING

This HMP was developed using a multi-jurisdictional approach. Although County-level departments have resources such as technical expertise and data that local jurisdictions may lack, involvement from local municipalities is critical to the collection of local knowledge related to hazard events. Local municipalities also have the legal authority to enforce compliance with land use planning and development. The HMSC and HMPT was committed to garnering municipal participation. Table 3.5-1 lists stakeholder meeting participation followed by table 3.5-2 showing overall participating, including worksheets and exercises. All of the County's 31 municipalities participated in the HMP Update process, achieving 100 percent participation.

HMPT meetings included the Kick-Off Meeting, the Mitigation Strategy and Capability Assessment Workshop and the Draft Plan Review Meeting. The Kick-Off Meeting, Mitigation Strategy and Capability Assessment Workshop, and Draft Plan Review Meeting were held over the course of two sessions, with both virtual and in-person opportunities. All HMPT meetings had morning and evening meeting sessions to maximize participation. Stakeholders were mailed and emailed invitations and reminders to all meetings. Surveys and forms were provided at meetings, posted to the project website, or emailed or mailed to jurisdictions. There was also targeted outreach to municipalities through the Risk Assessment Meetings. The Risk Assessment Meetings were held with small groups of municipalities or one-on-one with municipalities. Targeted outreach to each individual community via emails and phone calls was conducted. Forms and materials were shared with municipalities prior to and after each meeting.

Table 3.5-1: 2025 Venango County Stakeholder Meeting Participation				
	Planning Team Kickoff	Risk Assessment Meetings	Mitigation and Capability Workshop	Draft Plan Review Meetings
Allegheny Township	X			
Barkeyville Borough	X			X
Canal Township	X	X	X	
Cherrytree Township	X	X	X	
Clinton Township	X	X	X	
Clintonville Borough		X	X	
Cooperstown Borough		X		
Cornplanter Township	X	X	X	
Cranberry Township	X	X	X	
Emlenton Borough		X		
Franklin, City of	X	X	X	X
Frenchcreek Township	X	X	X	X
Irwin Township	X		X	
Jackson Township	X		X	
Mineral Township		X		
Oakland Township	X	X	X	
Oil City, City of	X		X	X
Oil Creek Township	X		X	X
Pinegrove Township		X		
Pleasantville Borough	X		X	
Plum Township	X		X	
Polk Borough	X		X	
President Township	X		X	
Richland Township	X	X	X	
Rockland Township	X		X	
Rouseville Borough		X	X	
Sandycreek Township	X		X	
Scrubgrass Township	X		X	

Table 3.5-1: 2025 Venango County Stakeholder Meeting Participation				
	Planning Team Kickoff	Risk Assessment Meetings	Mitigation and Capability Workshop	Draft Plan Review Meetings
Sugarcreek Borough	X	X	X	X
Utica Borough	X	X	X	
Other Stakeholders				
Clarion County	X			
Cranberry Township Area School District	X			
DCNR - Bureau of Forestry	X		X	
Franklin Area School District	X			
Mercer County DPS			X	
National Fuel Gas	X			
Oil Region Alliance				X
PA Department of Environmental Protection (DEP)	X		X	X
PA Department of Housing (DOH)	X		X	
Pathways Adolescent Center	X		X	
PennDOT				X
The Derrick				X
UPMC Northwest	X		X	
Valley Grove School District	X			
Venango County Regional Planning Commission	X	X	X	X
Venango County Department of Public Safety	X	X	X	X
Venango County Conservation District	X		X	X

Table 3.5-2: 2025 Venango County Stakeholder Participation

Municipalities	Attended a Meeting	Worksheets and Exercises					
		Evaluation of Identified Hazards and Risk Worksheet	Capability Assessment Survey	NFIP Compliance and Capabilities Survey	Mitigation Action Progress Form	Community Lifelines Form	New Mitigation Action Form
Allegheny Township	X	X	X	X	X	X	
Barkeyville Borough	X	X	X				
Canal Township	X	X		X			
Cherrytree Township	X	X	X	X	X	X	X
Clinton Township	X	X	X				
Clintonville Borough	X	X			X		
Cooperstown Borough	X	X	X	X			
Cornplanter Township	X	X	X	X		X	
Cranberry Township	X	X				X	
Emlenton Borough	X	X	X	X		X	
Franklin, City of	X	X		X	X	X	X
Frenchcreek Township	X	X	X	X			
Irwin Township	X	X					
Jackson Township	X	X	X				
Mineral Township	X	X			X		
Oakland Township	X	X	X				
Oil City, City of	X	X				X	
Oil Creek Township	X	X	X	X	X	X	X
Pinegrove Township	X	X	X	X			
Pleasantville Borough	X	X	X	X		X	

Table 3.5-2: 2025 Venango County Stakeholder Participation							
Municipalities	Attended a Meeting	Worksheets and Exercises					
		Evaluation of Identified Hazards and Risk Worksheet	Capability Assessment Survey	NFIP Compliance and Capabilities Survey	Mitigation Action Progress Form	Community Lifelines Form	New Mitigation Action Form
Plum Township	X	X		X			
Polk Borough	X	X					
President Township	X		X	X			X
Richland Township	X	X					
Rockland Township	X	X	X	X		X	X
Rouseville Borough	X	X	X	X		X	X
Sandycreek Township	X	X	X	X			
Scrubgrass Township	X	X					
Sugarcreek Borough	X	X	X	X	X		
Utica Borough	X	X	X			X	
Victory Township	X	X					
Venango County	X				X		
Other Stakeholders							
City of Franklin Fire Department		X					
Franklin Area School District		X					
Pathways Adolescent Center		X					
Valley Grove School District		X					

4. RISK ASSESSMENT

4.1. UPDATE PROCESS SUMMARY

This Risk Assessment provides a factual basis for activities proposed by the County in their Mitigation Strategy. Hazards that may affect Venango County are identified and defined in terms of location and geographic extent, magnitude of impact, previous events, and the likelihood of future occurrence. Wherever data could be validated, information from the previous plan has been incorporated and/or updated in the 2025 HMP. In addition, new data sources and analysis have been incorporated throughout the Risk Assessment.

The 2004 Venango County HMP included a list of eight natural and seven human-made hazards affecting the County. In the 2010 HMP, the HMSC added 2 hazards: Wildfire and Pandemic and Infectious Disease. For the 2015 HMP, the HMSC identified and added the following hazards: Oil and Gas Extraction to Environmental Hazards and added Radon Exposure as an additional hazard. In addition, the 2010, 2015, and 2025 Plans re-arranged the hazard profiles to be compliant with the Commonwealth of Pennsylvania's Standard Operating Guide.

For the 2025 Plan Update, the HMSC reviewed the previously identified hazards and ensured that they remained currently relevant hazards. The HMSC also reviewed the 2023 State Hazard Mitigation Plan and, for consistency, updated the hazards. Based on input from stakeholders, the HMSC also decided to include five new hazards. Table 4.1-1 provides the list of the new hazards identified and included in the 2025 HMP, and below the hazards carried over from the 2020 HMP.

Table 4.1-1: Identified Hazards	
2025 HMP Additions	
Human-Made Hazard: Civil Disturbance	Human-Made Hazard: Transportation Incidents
Human-Made Hazard: Environmental Hazards - Coal Mining	Human-Made Hazard: Utility Interruption
Human-Made Hazard: Cyber-Terrorism	
2020 Hazards Carried Over	
Natural Hazard: Drought	Natural Hazard: Hurricane, Tropical Storm, Nor'easter
Natural Hazard: Earthquake	Natural Hazard: Tornado & Windstorm
Natural Hazard: Flood, Flash Flood, and Ice Jam	Human-Made Hazard: Environmental Hazards - Hazardous Materials Release

Table 4.1-1: Identified Hazards	
Natural Hazard: Landslide	Human-Made Hazard: Environmental Hazards - Conventional Oil and Gas Wells
Natural Hazard: Pandemic & Infectious Disease	Human-Made Hazard: Environmental Hazards - Unconventional Oil and Gas Wells
Natural Hazard: Radon Exposure	Human-Made Hazard: Dam Failure

After the HMSC identified the hazards, they developed risk profiles in order to define the characteristics of the hazard as it applies to Venango County. Following hazard identification and profiling, a vulnerability assessment was performed to identify the impact of natural or human-made hazard events on people, buildings, infrastructure, and the community. Each natural and human-made hazard is discussed in terms of its potential impact on individual communities in Venango County, including the types of structures and infrastructure that may be at risk. The assessment allows the County and its municipalities to focus mitigation efforts on areas most likely to be damaged or most likely to require early response to a hazard event. A vulnerability analysis was performed which identifies structures, critical facilities or people that may be impacted by hazard events and describes what those events can do to physical, social and economic assets. Depending upon data availability, assessment results may consist of an inventory of vulnerable structures or populations.

Each hazard profile has an **“Equity in Vulnerable Communities” Section**, which expands upon how certain socioeconomic factors can result in hazards having a disproportionate impact on certain populations or communities. This assessment allows the County and its municipalities to focus mitigation and preparedness efforts more adequately by allocating resources more fairly, improving emergency responses, and enhancing overall community resilience.

Figure 4.1-1: FEMA's Community Lifelines (FEMA, 2024)



At the end of each range of magnitude section for each of the hazard profiles also identifies are Community Lifelines that may be affected by the associated natural hazards. FEMA community lifelines are essential services that enable the continuous operation of critical government and business functions, which are crucial for human health, safety, and well-being. These lifelines, which are listed in Table Figure 4.1-1, form the backbone of a community's resilience to disasters. Additionally, Community lifelines will serve as a focal point for assessing vulnerabilities and implementing strategies to minimize disruptions.

4.2. HAZARD IDENTIFICATION

4.2.1 Table of Presidential Disaster Declarations

Under the Stafford Act, there are two forms of presidential action that authorize federal disaster assistance dollars. Presidential Emergency Declarations are intended to spur activities that will protect property and strengthen public safety to lessen impacts or avoid a catastrophic event. Presidential Disaster Declarations are made as a result of a disaster event and provide supplemental coordination and financial assistance beyond the ability of state and local governments (McCarthy, 2011). Because of the difference in these declarations, a single event may qualify for both kinds of declarations.

There is no financial threshold for an Emergency Declaration, but there are two thresholds for Presidential Disaster Declarations established under the Stafford Act: a state and a county threshold. These thresholds are based on a formula that uses the population of the jurisdiction (as recorded in the decennial Census) times a set per capita indicator. For federal fiscal year 2021, these thresholds are \$4.60 per capita for counties and \$1.84 per capita for the state. With a population of over 50,000, the Venango County threshold is over \$230 thousand dollars. State and county thresholds

must be simultaneously attained for a Presidential Disaster Declaration to be issued (FEMA, 2024f).

Table 4.2.1-1: Presidential Disaster and Emergency Declarations affecting Venango County (FEMA, 2024d)

Date	Declaration Number	Event
March 2020	4506	COVID-19 Pandemic
March 2020	3441	COVID-19 Pandemic
October 2013	4149	Severe Storms, Tornadoes, and Flooding
October 2012	3356	Hurricane Sandy
September, 2005	3235	Hurricane Katrina Evacuation
September, 2004	1555	Severe Storm Associated with Tropical Depression
September, 2004	1557	Tropical Depression Ivan
August, 2003	1485	Severe Storms, Tornadoes, and Flooding
July, 1996	1130	Severe Storms and Flooding
January, 1996	1093	Severe Storms and Flooding
March, 1993	3105	Severe Snowfall and Winter Storm
June, 1985	737	Severe Storms, Tornadoes, and High Winds
June, 1981	641	Severe Storms and Flooding
January, 1977	3026	Snowstorm
June, 1972	340	Tropical Storm Agnes

Since 1955, declarations have been issued for various hazard events including hurricanes or tropical storms, severe summer and winter storms, flooding and drought. A unique Presidential Emergency Declaration was issued in September 2005. Through Emergency Declaration 3235, President George W. Bush declared that a state of emergency existed in the Commonwealth of Pennsylvania and ordered federal aid to supplement Commonwealth and local response efforts to help people evacuated from their homes due to Hurricane Katrina. All counties within the Commonwealth, including Venango County, were indirectly affected by Hurricane Katrina as a result of evacuee assistance.

The governor of Pennsylvania issues proclamations on disasters and emergencies from weather impacts to health issues. Table 4.2.1-2 history of those proclamations through 2018. These proclamations are issued by the governor of Pennsylvania to communicate

specific time periods for raising awareness about an issue or celebrating milestones. They also can declare states of emergency or call legislature into a special session. These are state-wide issues effecting all counties including Venango County.

Table 4.2.1-2: Emergency Proclamations by the Governor of Pennsylvania (2018-2024)

Date	Event
January 2018	Opioid Crisis
June 2018	Severe Weather Event (Continuous Storms Causing a Rapid Buildup of Water)
August 2018	Severe Weather Event (Heavy Rainfall and Flash Flooding)
January 2019	Severe Winter Event (Snow, Ice, and Flooding)
March 2020	COVID-19
May 2020	Civil Disturbance Emergency (The Death of George Floyd)
August 2020	Hurricane Ida
October 2020	Civil Disturbance Emergency (The Death of Walter Wallace Jr.)
December 2020	Winter Event (Snow, Ice, Flooding)
February 2021	Winter Weather (Snow, Ice, High Winds)
April 2021	Civil Disturbance Emergency (Black Lives Matter Movement)
January 2022	Forbes Avenue Bridge Collapse
June 2023	I-95 Disaster Proclamation
January 2024	Tropical Storm Debby

4.2.2 Summary of Hazards

Following a review of the hazards evaluated in the 2004, 2010, 2015, and 2021 Hazard Mitigation Plans, as well as the Pennsylvania Standard List of Hazards, the Hazard Mitigation Steering Committee, with input from the Hazard Mitigation Planning Team, determined that the 2025 Plan should identify, profile, and analyze 19 hazards. These include all hazards profiled in the 2021 Plan, with several additions and refinements.

Environmental hazards were expanded to include hazardous materials release, conventional oil and gas wells, unconventional oil and gas wells, and coal mining. Utility distribution, civil disturbance, and transportation incidents were also added.

The PA State Hazard Mitigation Plan includes other hazards such as extreme temperature, hailstorms, and invasive species. After conversation with the planning

team and steering committee, it was decided not to include these hazards as they are not considered a major concern for the County. While jurisdictions and stakeholders had the option to include it, none chose to do so. All hazards will be reviewed during the next annual updates. Overall, the Planning Team emphasized a limited focus on human-made hazards, choosing to prioritize those deemed most relevant and impactful for the County.

Table 4.2.2-1 contains a complete list of the 25 hazards that have the potential to impact Venango County as identified through previous Risk Assessments, the County Hazards Vulnerability Analysis, and input from those that participated in the 2025 HMP Update. Hazard profiles are included in Section 4.3 for each of these hazards.

Table 4.2.2-1 Descriptions of Natural and Human-Made Hazard Profiled in the 2025 HMP Update (PEMA, 2020)	
Profiled Hazard	Hazard Description
Natural	
Drought	Drought is defined as a deficiency of precipitation experienced over an extended period of time, usually a season or more. Droughts increase the risk of other hazards, like wildfires, flash floods, and landslides or debris flows. This hazard is of particular concern in Pennsylvania due to the prevalence of farms and other water-dependent industries, water-dependent recreation uses, and residents who depend on wells for drinking water.
Earthquake	An earthquake is the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 10-20 miles of the earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of underground caverns. earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area.
Flood, Flash Flood, Ice Jam	Flooding is the temporary condition of partial or complete inundation of normally dry land, and it is the most frequent and costly of all natural hazards in Pennsylvania. Flash flooding is usually a result of heavy localized precipitation falling in a short time period over a given location, often along mountain streams and in urban areas where much of the ground is covered by impervious surfaces. Winter flooding can include ice jams which occur when warm temperatures and heavy rain cause snow to melt rapidly. snow melt combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of a river. The ice layer often breaks into large chunks, which float downstream, piling up in narrow passages and near other obstructions such as bridges and dams.
Hurricane, Tropical Storm, Nor'easter	Hurricanes, tropical storms, and nor'easters are classified as cyclones and are any closed circulation developing around a low-pressure center in which the winds rotate counterclockwise (in the northern hemisphere) and whose diameter averages 10-30 miles across. potential threats from hurricanes include powerful winds, heavy rainfall, storm surges, coastal and inland flooding, rip currents, tornadoes, and landslides. The Atlantic hurricane season runs from June 1 to November 30.

Table 4.2.2-1 Descriptions of Natural and Human-Made Hazard Profiled in the 2025 HMP Update (PEMA, 2020)

Profiled Hazard	Hazard Description
Landslide	In a landslide, masses of rock, earth or debris move down a slope. landslides can be caused by a variety of factors, including earthquakes, storms, fire, and human modification of land. Areas that are prone to landslide hazards include previous landslide areas, areas on or at the base of slopes, areas in or at the base of drainage hollows, developed hillsides with leach field septic systems, and areas recently burned by forest or brush fires.
Pandemic and Infectious Disease	A pandemic is a global outbreak of disease that occurs when a new virus emerges in the human population, spreading easily in a sustained manner, and causing serious illness. An epidemic describes a smaller-scale infectious outbreak, within a region or population, that emerges at a disproportional rate. Infectious disease outbreaks may be widely dispersed geographically, impact large numbers of the population, and could arrive in waves lasting several months at a time.
Radon Exposure	Radon is a radioactive gas produced by the breakdown of uranium in soil and rock that can lead to lung cancer in people exposed over a long period of time. Most exposure comes from breathing in radon gas that enters homes and buildings through foundation cracks and other openings. According to the dep, approximately 40% of Pennsylvania homes have elevated radon levels.
Subsidence, Sinkhole	Land subsidence is a gradual settling or sudden sinking of the ground surface due to the movement of subsurface materials. A sinkhole is a subsidence feature resulting from the sinking of surficial material into a pre-existing subsurface void. Subsidence and sinkholes are geologic hazards that can impact roadways and buildings and disrupt utility services. Subsidence and sinkholes are most common in areas underlain by limestone and can be exacerbated by human activities such as water, natural gas, and oil extraction.
Tornado, Windstorm	A tornado is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground. About 1,250 tornadoes hit the united states each year, with about 16 hitting Pennsylvania. Damaging winds exceeding 50-60 miles per hour can occur during tornadoes, severe thunderstorms, winter storms, or coastal storms. These winds can have severe impacts on buildings, pulling off the roof covering, roof deck, or wall siding and pushing or pulling off the windows.
Wildfire	A wildfire is an unplanned fire that burns in a natural area. Wildfires can cause injuries or death and can ruin homes in their path. Wildfires can be caused by humans or lightning, and can happen anytime, though the risk increases in period of little rain in Pennsylvania, 98% of wildfires are caused by people.
Winter Storm	A winter storm is a storm in which the main types of precipitation are snow, sleet, or freezing rain a winter storm can range from a moderate snowfall or ice event over a period of a few hours to blizzard conditions with wind-driven snow that lasts for several days. Most deaths from winter storms are not directly related to the storm itself, but result from traffic accidents on icy roads, medical emergencies while shoveling snow, or hypothermia from prolonged exposure to cold.
Human-Made	

Table 4.2.2-1 Descriptions of Natural and Human-Made Hazard Profiled in the 2025 HMP Update (PEMA, 2020)

Profiled Hazard	Hazard Description
Civil Disturbance	A civil disturbance is defined by FEMA as a civil unrest activity (such as a demonstration, riot, or strike) that disrupts a community and requires intervention to maintain public safety.
Cyber Terrorism	Cyber terrorism refers to acts of terrorism committed using computers, networks, and the internet. The most widely cited definition comes from denning's testimony before the special oversight panel on terrorism: "cyberterrorism...is generally understood to mean unlawful attacks and threats of attack against computers, networks, and the information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives. Further, to qualify as cyberterrorism, an attack should result in violence against persons or property, or at least cause enough harm to generate fear."
Dam Failure	Dam failure is the uncontrolled release of water (and any associated wastes) from a dam. This hazard often results from a combination of natural and human causes, and can follow other hazards such as hurricanes, earthquakes, and landslides. The consequences of dam failures can include property and environmental damage and loss of life.
Environmental Hazards - Coal Mining	Major impacts from coal mining include subsidence, landscape changes, and the chemical degradation of surface and subsurface waters. In addition, active and abandoned mines can result in injury and loss of human life. In active mines, workers can be injured or killed by mine collapse, entrapment, poisonous gases, inundation, explosions, fires, equipment malfunction, or improper ventilation. In abandoned mines, causes of injury or death include falling and drowning.
Environmental Hazards- Gas and Liquid Pipelines	Pipeline failures are low-probability, potentially high-consequence events. Although gas and liquid pipeline failures are infrequent, the hazardous and inflammable materials released by these events can pose a significant threat to public safety and the built and natural environment. Explosions associated with pipeline failures, for example, can cause severe injury to nearby residents and destroy homes and other property.
Environmental Hazards - Hazardous Materials Release	Hazardous material releases can contaminate air, water, and soils and have the potential to cause injury or death. Dispersion can take place rapidly when transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. When caused by natural hazards, these incidents are known as secondary events.
Environmental Hazards - Conventional Oil & Gas Wells	Many of the hazards associated with conventional oil and gas extraction relate to the contamination of surface and subsurface waters. Abandoned oil and gas wells that are not properly plugged can contaminate groundwater and pollute domestic drinking water wells. In addition, surface waters and soil can be contaminated by brine, a salty wastewater product of oil and gas well drilling, or by oil spills. This pollution can degrade public drinking water supplies and disrupt aquatic ecosystems.
Environmental Hazards - Unconventional Oil & Gas Wells	In addition to the hazards associated with conventional oil and gas extraction, potential hazards from Marcellus Shale Gas wells include surface water depletion affecting drinking water supplies and aquatic ecosystems; contaminated surface and groundwater resulting from hydraulic fracturing and the recovery of contaminated hydraulic fracturing fluid; and mishandling of solid toxic waste.

Table 4.2.2-1 Descriptions of Natural and Human-Made Hazard Profiled in the 2025 HMP Update (PEMA, 2020)

Profiled Hazard	Hazard Description
Nuclear Incident	Nuclear explosions can cause significant damage and casualties from blast, heat, and radiation. The primary concern following a nuclear accident or nuclear attack is the extent of radiation, inhalation, and ingestion of radioactive isotopes which can cause acute health effects (e.g. death, burns, severe impairment), chronic health effects (e.g. cancer), and psychological effects.
Substance Use Disorder	Substance use disorder occurs when an individual becomes physically dependent on opioids, which include opiates and narcotics. Opioids are a synthetic substance found in certain prescription pain medications: morphine, codeine, methadone, oxycodone, hydrocodone, fentanyl, and hydromorphone, and street drugs like heroin. Opioids block the body's ability to feel pain and can create a sense of euphoria. Individuals often build a tolerance to opioid drugs, which leads them to take more of the medication than originally prescribed.
Terrorism	Terrorism is use of force or violence against persons or property with the intent to intimidate or coerce. Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber-attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons. cyber-attacks have become an increasingly pressing concern.
Transportation Incidents	Transportation incidents are technological hazards involving the nation's system of land, sea, and air transportation infrastructure. A flaw or breakdown in any component of this system can and often does result in a major disaster involving loss of life, injuries, property and environmental damage, and economic consequences.
Urban Fire and Explosion	Urban fire and explosion hazards include vehicle and building/structure fires as well as overpressure rupture, overheat, or other explosions that do not ignite. This hazard occurs in denser, more urbanized areas statewide and most often occurs in residential structures. Nationally, fires cause over 3,000 deaths and approximately 16,000 injuries each year.
Utility Interruption	Utility interruption hazards are hazards that impair the functioning of important utilities in the energy, telecommunications, public works, and information network sectors. utility interruption hazards include the following: • Geomagnetic Storms • Fuel or Resource Shortage • Electromagnetic Pulse • Information Technology Failure • Ancillary Support Equipment • Public Works Failure • Telecommunications System Failure • Transmission Facility or Linear Utility Accident • Major Energy, Power, Utility Failure

4.3. HAZARD PROFILES

NATURAL HAZARDS

4.3.1. Drought

4.3.1.1. Location and Extent

Drought is a natural climatic condition which occurs in virtually all climates, the consequence of a natural reduction in the amount of precipitation experienced over a long period of time, usually a season or more in length. High temperatures, prolonged winds, and low relative humidity can exacerbate the severity of drought. This hazard is of particular concern in Pennsylvania due to the presence of farms as well as water-dependent industries and recreation areas across the Commonwealth. A prolonged drought could severely impact these sectors of the local economy, as well as residents who depend on wells for drinking water and other personal uses (National Drought Mitigation Center, 2006).



Maps showing locations currently experiencing drought conditions are posted on various websites (including <http://waterwatch.usgs.gov>) and show locations where stream flow is below normal and where drought conditions exist or are emerging. As this plan was being developed between May 2024 and January 2025, Venango County experienced a period of normal drought status (PA DEP, 2024b).

4.3.1.2. Range of Magnitude

Droughts can have varying effects, depending upon what month they occur, severity, duration, and location. Some droughts may have their greatest impact on agriculture and even short-term droughts, when coupled with extreme temperatures can be devastating. Others may impact water supply or other water use activities such as recreation. Most droughts cause direct impacts to aquatic resources. Drought events are defined by rainfall amounts, vegetation conditions, soil-moisture conditions, water levels in reservoirs, stream flow, agricultural productivity, or economic impacts.

Hydrologic drought events result in a reduction of stream flows, reduction of lake/reservoir storage, and a lowering of groundwater levels. These events have adverse impacts on public water supplies for human consumption, rural water supplies for livestock consumption and agricultural operations, water quality, natural soil water or irrigation water for agriculture, soil moisture, conditions conducive to wildfire events, and water for navigation and recreation.

The Commonwealth uses five parameters to assess drought conditions:

- Stream flows (compared to benchmark records);
- Precipitation (measured as the departure from normal, 30 year average precipitation);
- Reservoir storage levels in a variety of locations (especially three New York City reservoirs in Upper Delaware River Basin);
- Groundwater elevations in a number of counties (comparing to past month, past year and historic record); and
- The Palmer Drought Index (Table 4.3.1-1), a measure of soil moisture computed by the National Weather Service.

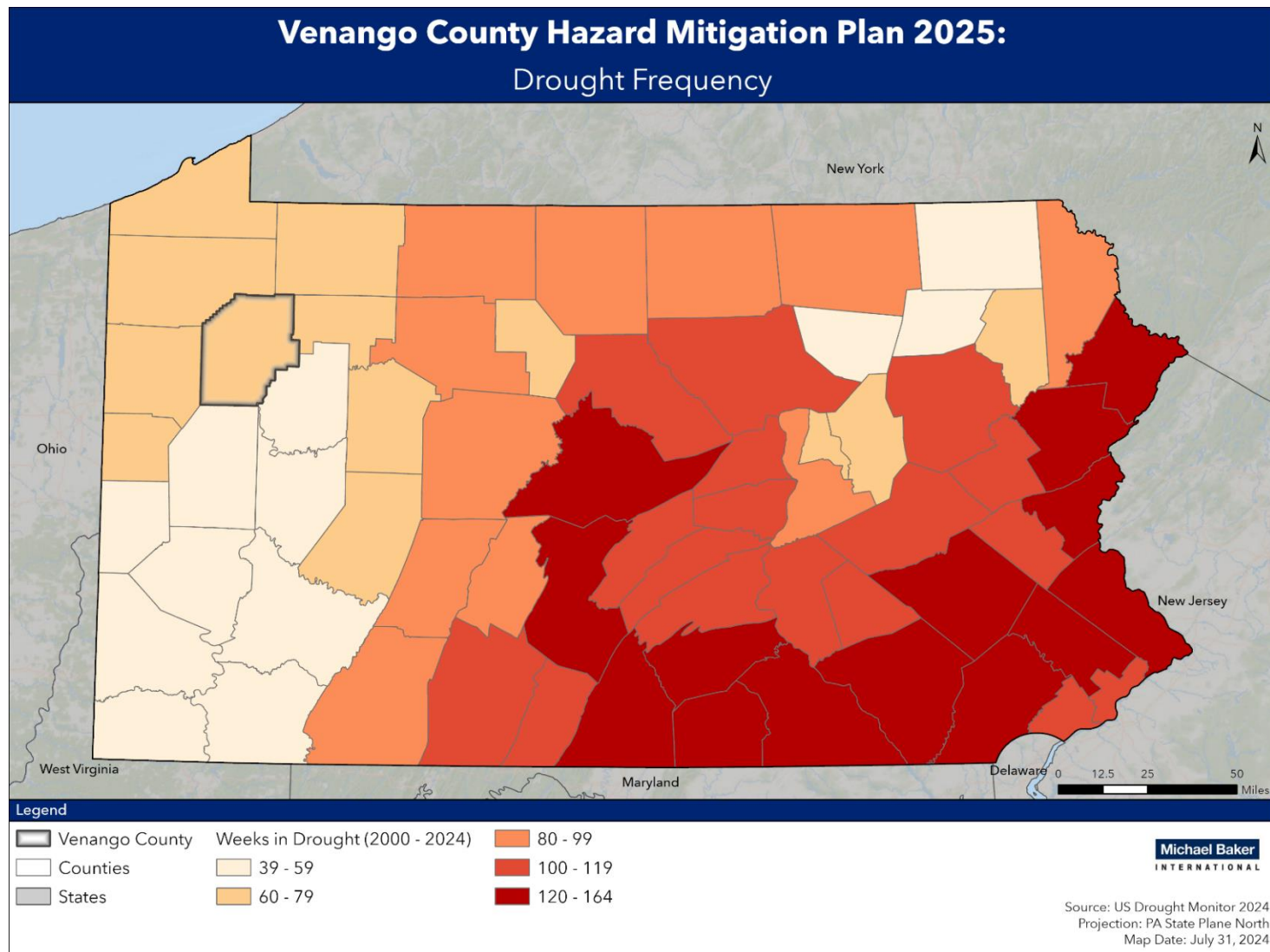
One way to measure the magnitude of a drought is through the PDSI. This index is based on several meteorological and hydrological factors, including temperature and soil moisture levels, and is computed weekly by NWS' Climate Prediction Center. The index compares precipitation received against the average amount expected during that period. Droughts are expressed as negative numbers. Palmer values of -2.00 to -2.99 indicate a watch status; values of -3.00 to -3.99 indicate a warning; and values of -4.00 and less indicate an emergency.

Table 4.3.1.2-1: Palmer Drought Severity Index (PDSI) Classifications (NOAA, 2024a)	
Severity Category	PDSI Value
Extremely wet	4.0 or more
Very wet	3.0 to 3.9
Moderately wet	2.0 to 2.99
Slightly wet	1.0 to 1.99
Incipient wet spell	0.5 to 0.99
Near normal	0.49 to -0.49
Incipient dry spell	-0.5 to -0.99
Mild drought	-1.0 to -1.99
Moderate drought	-2.0 to -2.99
Severe drought	-3.0 to -3.99
Extreme drought	-4.0 or less

Data provided by National Centers for Environmental Information show that drought conditions in the Northwest Plateau region of Pennsylvania have resulted in PDSI level as low as -2.66. This was during a drought that lasted for almost a year from August 2020 to August 2021.

According to Figure 4.3.1-1, Venango County has experienced between 60-79 weeks in drought since 2000. As shown on the map, central and southeast Pennsylvania experienced more drought years than the rest of the Commonwealth. This is the best data available at the time of this Plan Update.

Figure 4.3.1.2-1: Venango County Drought Frequency



In Pennsylvania, PEMA has primary responsibility for managing droughts with direct support from the DEP. According to *Drought Management in Pennsylvania* (2012), PEMA and DEP use the following three stages to describe and manage droughts. They are listed below in order of increasing severity:

- **Drought Watch:** A period to alert government agencies, public water suppliers, water users and the public regarding the potential for future drought-related problems. The focus is on increased monitoring, awareness, and preparation for response if conditions worsen. A request for voluntary water conservation is made. The objective of voluntary water conservation measures during a drought watch is to reduce water uses by 5 percent in the affected areas. Due to varying conditions, individual water suppliers or municipalities may be asking for more stringent conservation actions.
- **Drought Warning:** This phase involves a coordinated response to imminent drought conditions and potential water supply shortages through concerted voluntary conservation measures to avoid or reduce shortages, relieve stressed sources, develop new sources, and if possible, forestall the need to impose mandatory water use restrictions. The objective of voluntary water conservation measures during a drought warning is to reduce overall water uses by 10-15 percent in the affected areas. Due to varying conditions, individual water suppliers or municipalities may be asking for more stringent conservation actions.
- **Drought Emergency:** This stage is a phase of concerted management operations to marshal all available resources to respond to actual emergency conditions, to avoid depletion of water sources, to assure at least minimum water supplies to protect public health and safety, to support essential and high priority water uses and to avoid unnecessary economic dislocations. It is possible during this phase to impose mandatory restrictions on non-essential water uses that are provided in the Pennsylvania Code (Chapter 119), if deemed necessary and if ordered by the Governor of Pennsylvania. The objective of water use restrictions (mandatory or voluntary) and other conservation measures during this phase is to reduce consumptive water use in the affected area by fifteen percent, and to reduce total use to the extent necessary to preserve public water system supplies, to avoid or mitigate local or area shortages and to assure equitable sharing of limited supplies.
- **Local Water Rationing:** Although not a drought phase, local municipalities may, with the approval of the PA Emergency Management Council, implement local water rationing to share a rapidly dwindling or severely depleted water supply in designated water supply service areas. These individual water rationing plans, authorized through provisions of the Pennsylvania Code (Chapter 120), will require specific limits on individual water consumption to achieve significant reductions in use. Under both mandatory restrictions imposed by the Commonwealth and local water rationing, procedures are provided for

granting of variances to consider individual hardships and economic dislocations.

The worst historical drought event in Pennsylvania occurred in 1963, when precipitation statewide averaged below normal for ten of twelve months. Drought emergency status led to widespread water use restrictions, and reservoirs dipped to record low levels. Corn, hay, and other agricultural products shriveled in parched fields, causing economic losses. Governor William Scranton sought drought aid for Pennsylvania in the face of mounting agricultural losses, and the event became a presidentially declared disaster in September 1963 (Gelber, 2002).

The Pennsylvania Crop Insurance Education and Participation Program (a partnership of the US Department of Agriculture, the Pennsylvania Department of Agriculture, and Penn State University) estimated that drought was the top reason for crop failure in Pennsylvania from 1981-2009; roughly 59% of all crop failures were due to drought.

Environmental impacts of drought include:

- Hydrologic effects – lower water levels in reservoirs, lakes and ponds; reduced stream flow; loss of wetlands; estuarine impacts; groundwater depletion and land subsidence; effects on water quality such as increases in salt concentration and water temperature.
- Damage to animal species – lack of feed and drinking water; disease; loss of biodiversity; migration or concentration; and reduction and degradation of fish and wildlife habitat.
- Damage to plant communities – loss of biodiversity; loss of trees from urban landscapes and wooded conservation areas.
- Increased number and severity of fires.
- Reduced soil quality.
- Air quality effects – dust and pollutants.
- Loss of quality in landscape.
- Loss of water for navigation and recreation.
- Increase in nitrate levels which can have health impacts on pregnant women and children.

The main type of drought that affects Venango County is a hydrological drought. A hydrologic drought results when there is a shift in normal weather patterns over an area causing the amount of precipitation to fall significantly below the long-termed average. Conversely, a water management drought results not from a reduction in supply, but a disparity in supply versus demand. Poor water management practices and/or community planning generally cause this.

Droughts are regional climatic events, so when these events occur in Venango County, impacts are felt across the entire county as well as areas outside county boundaries. The spatial extent for areas of impact can range from localized areas in Pennsylvania to the entire Mid-Atlantic region. Areas with extensive agricultural (farmland) land uses are most vulnerable to drought. Venango County has many agricultural lands, illustrated in Figure 4.3.1-1, which are some of the most vulnerable in the county with regard to drought.

Additionally, areas that heavily forested can also be negatively impacted by drought. The worst-case scenario for Venango County would be a protracted drought that impacted all commercial crop production as well as livestock losses due to deficient water supplies.

Figure 4.3.1.2-2: Venango Country Land Use Map

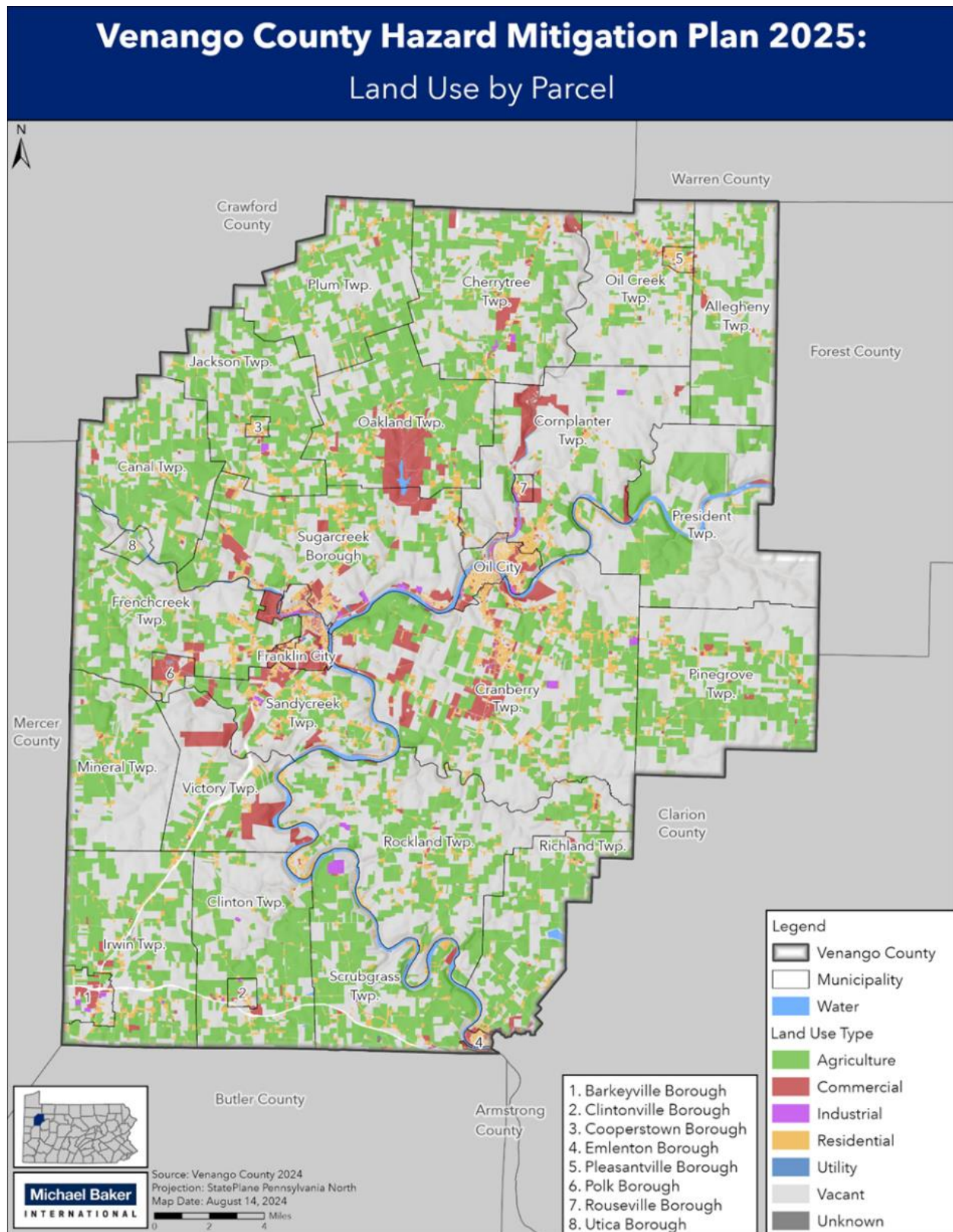


Table 4.3.1.2-2: Agriculture Land Breakdown by Municipality		
Municipality	Frequency	Acres
Allegheny Township	92	6445.3
Barkeyville Borough	20	576.8
Canal Township	185	8505.4
Cherrytree Township	280	9314.0
Clinton Township	161	8178.7
Clintonville Borough	7	253.2
Cooperstown Borough	2	67.8
Cornplanter Township	81	3896.2
Cranberry Township	364	14161.5
Franklin City	2	30.8
Frenchcreek Township	218	7979.9
Irwin Township	264	9823.1
Jackson Township	186	8098.1
Mineral Township	121	5147.3
Oakland Township	231	9436.0
Oil City	6	205.0
Oil Creek Township	123	3382.7
Pinegrove Township	239	9351.7
Pleasantville Borough	5	84.5
Plum Township	220	8207.7
Polk Borough	6	119.6
President Township	59	6746.9
Richland Township	162	7447.2
Rockland Township	259	11095.0
Rouseville Borough	1	38.4
Sandycreek Township	99	3385.5
Scrubgrass Township	199	9607.9
Sugarcreek Borough	184	6997.3
Utica Borough	10	259.6
Victory Township	90	2844.7

Table 4.3.2-1: Most Likely Lifelines Impacted by Drought	
LIFELINES	NOTES
	Drought will require significant personnel in response; some in recovery and mitigation.
	Crops may be lost and there are water regulation concerns.



Food and water shortages could exacerbate health challenges, especially for food-vulnerable populations.

4.3.1.3. Past Occurrence

Between 1930 and 1994, the Commonwealth of Pennsylvania experienced five significant droughts: 1930-1934, 1939-1942, 1953-1955, 1961-1967, and 1991-1992. From mid-1991 through early-1992, the County experienced an extreme drought lasting almost one year, per the DEP. The DEP maintains the most comprehensive data on drought occurrences across Pennsylvania. Declared drought status for Venango County from 1980 to Present is shown in the following table. Descriptions for drought status categories (i.e. watch, warning, and emergency) are included in [Section 4.3.1-1](#).

Table 4.3.3-1: Venango County Declared Drought Status From 1980 to 2024 (PA DEP, 2024a)

DATE	DROUGHT STATUS	DATE	DROUGHT STATUS
Jul 7, 1988 – Aug 24, 1988	Watch	Sep 30, 1999 – Dec 16, 1999	Warning
Aug 24, 1988 – Dec 12, 1988	Warning	Dec 16, 1999 – Feb 25, 2000	Warning
Jun 28, 1991 – Jul 24, 1991	Watch	Feb 25, 2000 – May 5, 2000	Watch
July 24, 1991 – Aug 16, 1991	Warning	Aug 24, 2001 – Nov 6, 2001	Watch
Aug 16, 1991 – Sep 13, 1991	Emergency	Nov 6, 2001 – Dec 5, 2001	Watch
Sep 13, 1991 – Oct 21, 1991	Emergency	Dec 5, 2001 – Feb 12, 2002	Watch
Oct 21, 1991 – Jan 16, 1992	Emergency	Feb 12, 2002 – May 13, 2002	Watch
Jan 17, 1992 – Apr 20, 1992	Emergency	April 11, 2006 – June 30, 2006	Watch
Apr 20, 1992 – Jun 23, 1992	Warning	Aug 6, 2007 – Sept 5, 2007	Watch
June 23, 1992 – Sep 11, 1992	Watch	Sept 5, 2007 – Oct 5, 2007	Watch
Sep 1, 1995 – Sep 20, 1995	Watch	Oct 5, 2007 – Jan 11, 2008	Watch
Sep 20, 1995 – Nov 8, 1995	Watch	Nov 7, 2008 – Jan 26, 2009	Watch
Nov 8, 1995 – Dec 18, 1995	Watch	Sep 16, 2010 – Nov 10, 2010	Watch
Dec 3, 1998 – Dec 8, 1998	Watch	Nov 10, 2010 – Dec 17, 2010	Watch
Dec 8, 1998 – Dec 14, 1998	Warning	Aug 5, 2011 – Sep 2, 2011	Watch
Dec 14, 1998 – Dec 16, 1998	Warning	Jul 19, 2012 – Aug 31, 2012	Watch

Table 4.3.3-1: Venango County Declared Drought Status From 1980 to 2024 (PA DEP, 2024a)

DATE	DROUGHT STATUS	DATE	DROUGHT STATUS
Dec 16, 1998 – Jan 15, 1999	Warning	Aug 2, 2016 – Sept 6, 2016	Watch
Jan 15, 1999 – Mar 15, 1999	Warning	Sept 6, 2016 – Nov 3, 2016	Watch
Jun 10, 1999 – Jun 18, 1999	Watch	Jun 15, 2023 – Aug 24, 2023	Watch
Jun 18, 1999 – July 20, 1999	Watch	Aug 24, 2023 – Sept 22, 2023	Watch
Jul 20, 1999 – Sep 30,	Watch	Sept 22, 2023 – Oct 20, 2023	Watch

As can be seen in Table 4.3.1-2 above, Venango County has not had a severe drought since 2000. According to DEP, the County has had seven Warnings and 27 Watches since the last drought emergency in August 1999. The USDA Risk Management Agency operates and manages the Federal Crop Insurance Corporation program. Since Venango County farms are eligible for crop insurance, it is possible to determine agricultural losses due to drought in the county.

Of the crop losses summarized in Table 4.3.1-3, the crop that suffered the most substantial losses (as defined by indemnity amount) was corn. Below provides the total indemnity amount by crop type for crop years 1952 through 2013.

The U.S. Department of Agriculture (USDA) Risk Management Agency operates and manages the Federal Crop Insurance Corporation program. Since Venango County farms are eligible for crop insurance, it is possible to determine agricultural losses due to drought in the County. From 1995 to 2023, Venango County paid \$1,395,543 indemnities. This is the second leading cause of crop loss in the county following excess moisture, precipitation, and rain.

4.3.1.4. Future Occurrence

It is difficult to forecast the severity and frequency of future drought events. Changing weather patterns have made many types of disasters more frequent and extreme. As temperatures climb, higher evaporation rates make droughts worse. The annual number of very hot days is growing and impacting areas that previously did not experience this hazard. Climate Central, an independent organization of scientists, predicts that drought intensity will more than double in the region around the City of Pittsburgh by 2050. The group also predicts that warming intensity will double by 2050, and there will be a sharp increase in heatwaves (Climate Central, 2019).

4.3.1.5. Vulnerability Assessment

The most significant losses resulting from drought events are typically found in the agriculture sector of the County's economy. The 1999 Gubernatorial Proclamation was issued in part due to significant crop damage. Preliminary estimates by the Department of Agriculture indicated possible crop losses across the Commonwealth in excess of \$500 million. This estimate did not include a 20% decrease in dairy milk production which also resulted in million-dollar losses (NDMC, 2009).

While these were statewide impacts, they illustrate the potential for droughts to severely impair the local economy in more agricultural communities. As of the 2022 Census of Agriculture, the US Department of Agriculture counted 329 farms in Venango County, a 32.4% decrease in farms since 2007 (487 farms). Nearly 45,637 acres of land are in farms, and average farm size is 139 acres. In 2022, the average market value of agricultural products sold per farm was \$41,949.

Almost 60% of the total products come from crop sales. Venango County's strongest agricultural performance is in grains, oilseeds, dry beans, and dry peas as well as in fruits, tree nuts, and berries and nursery, greenhouse, floriculture, and sod. According to the Agricultural Census, the county has a population of 1,207 layers (chickens), 3,877 cattle and calves, 612 sheep and lambs, and 349 hogs and pigs.

Wildfire is the most severe secondary effect associated with drought. Wildfires can devastate wooded and agricultural areas, threatening natural resources and farm production facilities. Prolonged drought conditions can cause major ecological changes, such as increases in scrub growth, flash flooding, and soil erosion.

It is important to recognize that another vulnerability in Venango County is a threat to the County's water supply. Venango County residents who private domestic wells are more vulnerable to droughts because their drinking water can literally dry up, but public supplies may also be at risk.

Table 4.3.1-4 shows the number of domestic wells per municipality. It is important to note that the well data was obtained from the Pennsylvania Groundwater Information System (PaGWIS). PaGWIS relies on voluntary submissions of well record data by well drillers; as a result, it is not a complete database of all domestic wells in the County. This is the most complete dataset of domestic wells available.

Table 4.3.5-1: PaGWIS Domestic Water Wells Drilled Per Municipality (PA DEP, 2024)

Municipality	Number of Reported Domestic Water Wells
Allegheny Township	57
Barkeyville Borough	138
Canal Township	152
Cherrytree Township	151

Table 4.3.5-1: PaGWIS Domestic Water Wells Drilled Per Municipality (PA DEP, 2024)

Municipality	Number of Reported Domestic Water Wells
Clinton Township	80
Clintonville Borough	3
Cooperstown Borough	17
Cornplanter Township	255
Cranberry Township	261
Emlenton Borough	6
Franklin City, City of	14
Frenchcreek Township	286
Irwin Township	134
Jackson Township	164
Mineral Township	115
Oakland Township	228
Oil City, City of	19
Oil Creek Township	128
Pinegrove Township	109
Pleasantville Borough	3
Plum Township	107
Polk Borough	41
President Township	94
Richland Township	25
Rockland Township	149
Rouseville Borough	110
Sandycreek Township	202
Scrubgrass Township	52
Sugarcreek Borough	229
Utica Borough	22
Victory Township	45
TOTAL	3396

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will have no effect on the drought vulnerability of the current communities in Venango County.

4.3.1.6. Equity in Vulnerable Communities

In terms of equity, communities within Venango County with higher concentrations of low-income households could be more susceptible to drought. These households are more likely to live in housing structures with lower-quality infrastructure and higher water bills relative to income. Municipalities with a lower mean household income

include Polk Borough, Rockland Township, and Rouseville Borough. Policies must ensure affordable access to water during droughts for communities that are vulnerable. Additionally, rural areas that are more dependent on well water than their urban counterparts and therefore may disproportionately suffer from drought, impacting both livelihoods and food security.

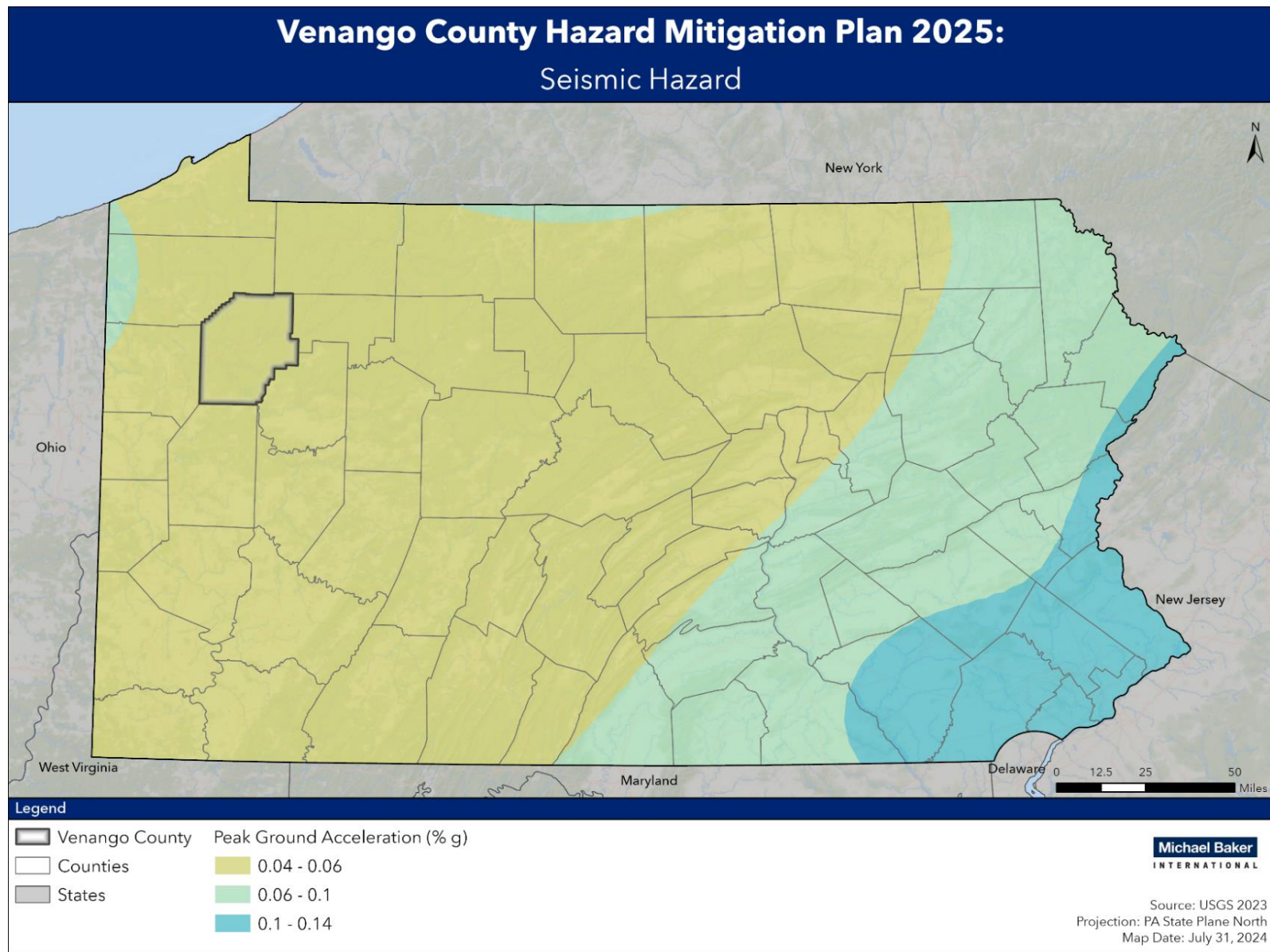
4.3.2. Earthquake

4.3.2.1. Location and Extent

Earthquake events in Pennsylvania typically do not impact areas greater than 100 km from the epicenter, and according to available data it does not appear that there have been any earthquake epicenters within Venango County. The area is generally not known for seismicity. Figure 4.3.2.1-1 shows the 2025 Seismic Hazard in Pennsylvania and Venango, expressed as the two-percent probability of exceedance in 50 years of peak ground acceleration (g). Venango lies in the 0.04 to 0.06 %g peak ground acceleration zone, indicating that the hazard is minimal. Earthquakes originating from outside Pennsylvania can also impact the Commonwealth by transmitting seismic waves through the ground, potentially causing minor structural damage to older buildings and infrastructure.



Figure 4.3.2.1-1 Venango County Seismic Hazard



4.3.2.2. Range of Magnitude

Earthquake magnitude is often measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake. Table 4.3.2-1 summarizes Richter Scale magnitudes as they relate to the spatial extent of impacted areas. Earthquake epicenters have occurred around Venango County in Crawford and Mercer Counties ranging from 3.0 to greater than 5.0 on the Richter Scale. Pennsylvania has not experienced any earthquakes with a magnitude greater than 6.0.

Table 4.3.2-1: Richter Scale Magnitudes and Associated Earthquake Size Effects	
RICHTER MAGNITUDES	EARTHQUAKE EFFECTS
Less than 3.5	Generally not felt but recorded.
3.5-5.4	Often felt, but rarely causes damage.
Under 6.0	At most, slight damage to well-designed buildings; can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive up to about 100 kilometers from epicenter.
7.0-7.9	Major earthquake; can cause serious damage over large areas.
8.0 or greater	Great earthquake; can cause serious damage in areas several hundred kilometers across.

The Richter Scale does not give any indication of the impact or damage of an earthquake, although it can be inferred that higher magnitude events cause more damage. The impact an earthquake event has on an area is typically measured in terms of earthquake intensity. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. A detailed description of the Modified Mercalli Intensity Scale is shown in Table 4.3.2-2. The earthquakes that occur in Pennsylvania originate deep with the Earth's crust, and not on an active fault. Based on historical data of earthquakes with a recorded intensity, little damage is expected from earthquake events. However, since the worst earthquake recorded in Pennsylvania was a magnitude 5.2.

Table 4.3.2-2: Modified Mercalli Intensity Scale with Associated Impacts			
SCALE	INTENSITY	DESCRIPTION OF EFFECTS	CORRESPONDING RICHTER SCALE MAGNITUDE
I	Instrumental	Usually detected only on seismographs.	<4.2
II	Feeble	Some people feel it	
III	Slight	Felt by people resting; like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	<5.4
VII	Very Strong	Mild alarm, walls crack, plaster falls	<6.1
VIII	Destructive	Moving cars uncontrollable, masonry fractures, poorly constructed buildings damaged	<6.9
IX	Ruinous	Some houses collapse, ground cracks, pipes break open	
X	Disastrous	Ground cracks profusely, many buildings destroyed, liquefaction and landslides widespread	<7.3
XI	Very Disastrous	Most buildings and bridges collapse, roads, railways, pipes and cables destroyed, general triggering of other hazards	<8.1
XII	Catastrophic	Total destruction, trees fall, ground rises and falls in waves	>8.1

Since the worst earthquake recorded in Pennsylvania was a magnitude 5.2, a worst-case scenario for this hazard would be if an earthquake of similar magnitude occurred in Venango County or near the border in an adjacent county, causing mild damage in populated areas. Structural damage would not be expected in this scenario for most buildings, but blighted structures or those in a state of disrepair might experience further structural damage.

Environmental impacts of earthquakes can be numerous, widespread, and devastating, particularly if indirect impacts are considered. The worst-case scenario, although highly unlikely, for Venango County would be the occurrence of a Mercalli Scale XII earthquake with the following consequences:

- Induced tsunamis and flooding or landslides and avalanches;
- Poor water quality;
- Damage to vegetation; and
- Breakage in sewage or toxic material containments.

However, because of its geographic location, these impacts are extremely unlikely to occur in Venango County.

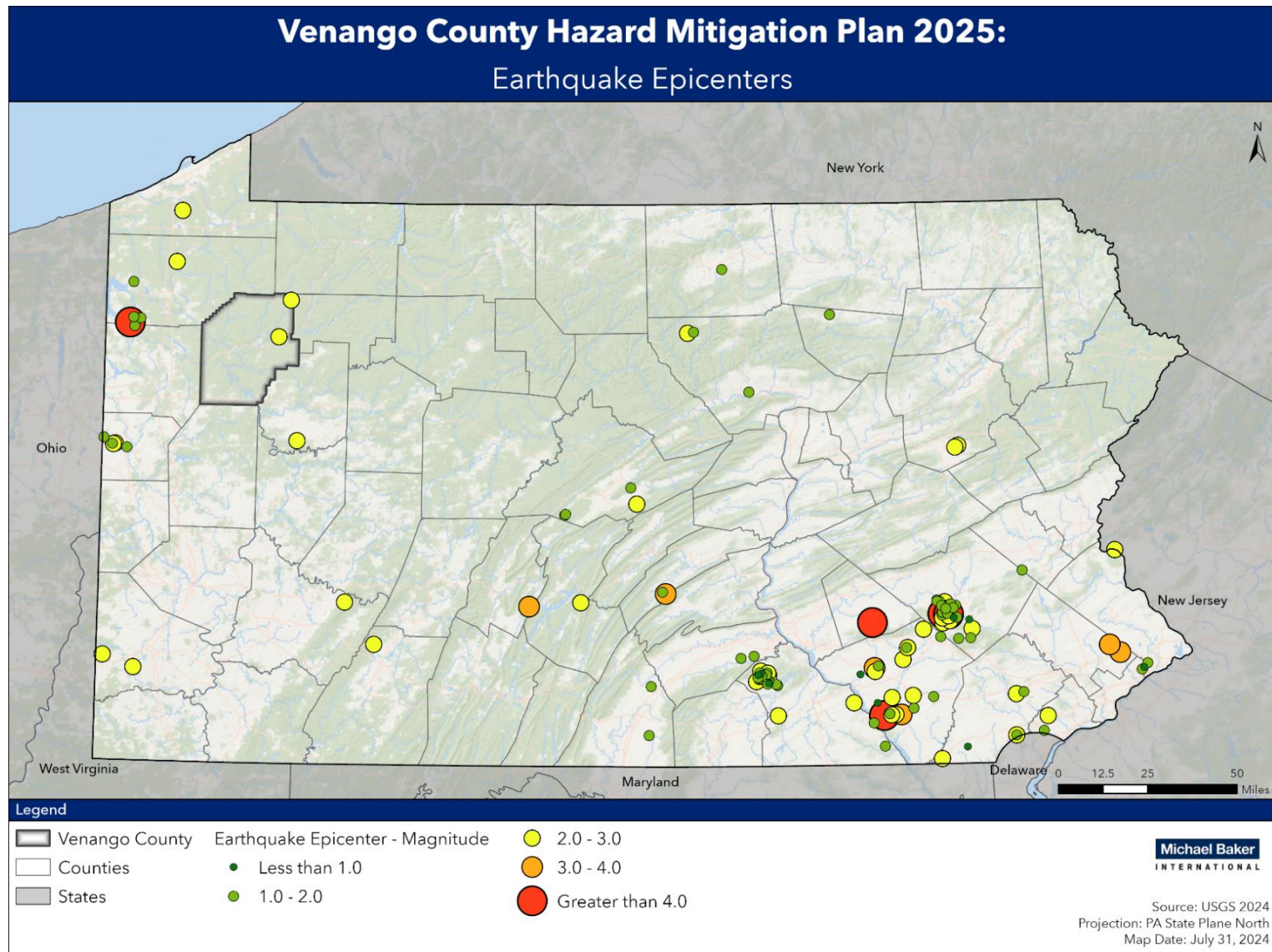
The potential impacts of drought on community lifelines are as follows:

Table 4.3.2-3: Most Likely Lifelines Impacted by Earthquakes	
LIFELINES	NOTES
 Food, Hydration, Shelter	Shelters may be affected depending on severity. Higher earthquake building standards can aid in mitigation.
 Health and Medical	Personnel will likely be overutilized in response and recovery, leading to potential gaps in capability.
 Hazardous Materials	Pipelines may be affected. Mitigation includes requiring higher building standards.

4.3.2.3. Past Occurrence

The most recent occurrence to take place in Venango County was a 2.4 magnitude earthquake recorded in 2024 near Cooperstown. Prior to this, there was a 2.13 magnitude earthquake recorded in April 2016 in the northeast corner Venango County. Prior to that a 2.3 magnitude earthquake was recorded in 2008 in the central part of the county. Figure 4.3.2-2 shows recorded earthquake events in Pennsylvania between 1990 and 2024. Earthquake events are shown in other areas of Pennsylvania, with a concentration of events occurring to the east of Cumberland County between Lancaster and Reading. Nearby Mercer and Crawford counties have experienced several large earthquakes in recent history. In 1998 a 5.2 magnitude earthquake took place on the border between the two counties. No injury or severe damage from earthquake events has been reported in Venango County.

Figure 4.3.3-1: Venango County Earthquake Epicenters



4.3.2.4. Future Occurrence

One way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. Peak ground acceleration (PGA) measures the strength of ground movements in this manner. PGA represents the rate in change of motion of the earth's surface during an earthquake as a ratio of the established rate of acceleration due to gravity. As shown in Figure 4.3.2-1, Venango County has a very low PGA ratio of 0.04. In contrast, the western United States has a peak ground acceleration ten times that of Venango County indicate that the future likelihood of an earthquake is unlikely as defined by the Risk Factor Methodology probability criteria (see Table 4.1-1).

4.3.2.5. Vulnerability Assessment

The magnitude of earthquakes in seen in Pennsylvania are small and shallow. Based on the history of earthquake events in and near Venango County, the County's vulnerability to this hazard is expected to be low. In the event of an earthquake, unanchored objects may be upset, but few damages are expected.

However, for earthquakes, the available history covers a period of less than 300 years, which is a relatively short period of time for an examination of earthquakes. Large earthquakes may only affect a location every several centuries or millennia. Environmental impacts of earthquakes can be numerous, widespread and devastating, particularly if indirect impacts are considered. Some secondary hazards caused by earthquakes may include fire, hazardous material release, landslides, flash flooding, avalanches, tsunamis, and dam failure. These secondary events could also result in disruptions to natural ecosystems, poor water quality, damage to vegetation, and the release of toxic materials and sewage. Impacts to infrastructure could include train derailments, pipeline failures, and utility interruptions. A very large earthquake affecting Venango County might cause structural damage in dilapidated structures or structures that do not meet current building codes. Thus, the impact of an earthquake might range from negligible to catastrophic. Based on historical data for Venango County, damage is likely to be minimal.

Structures identified as potentially at risk of damage due to an earthquake are older structures. All existing buildings have the potential to experience an earthquake. Given no history of damage in Venango County due to earthquake, damages are estimated to be limited to the more dilapidated structures and structures with unreinforced masonry. The number of homes in Venango county that are at least 50 years old is about 19,5000 (ACS Demographic and Housing Estimates, 2022).

Table 4.3.2.5: Age of Housing Structures in Venango County, by Municipality

	Built 2020 or later	Built 2010 to 2019	Built 2000 to 2009	Built 1990 to 1999	Built 1980 to 1989	Built 1970 to 1979	Built 1960 to 1969	Built 1950 to 1959	Built 1940 to 1949	Built 1939 or earlier
Allegheny Township	1	4	36	11	17	59	12	29	4	33
Barkeyville Borough	0	1	6	4	10	16	3	14	18	26
Canal Township	3	17	52	28	81	59	23	40	11	59
Cherrytree Township	0	7	92	130	92	113	21	70	18	95
Clinton Township	7	22	41	42	80	62	20	26	22	64
Clintonville Borough	0	0	16	45	29	78	14	15	9	57
Cooperstown Borough	0	0	0	2	4	45	49	29	1	52
Cornplanter Township	0	5	54	27	116	177	122	189	94	287
Cranberry Township	0	96	334	179	261	561	239	521	331	646
Emlenton Borough	0	8	21	19	25	36	32	25	18	155
Franklin, City of	0	51	182	71	153	271	186	286	151	1,599
Frenchcreek Township	2	40	91	41	113	130	75	101	42	82
Irwin Township	0	45	136	104	40	92	35	22	17	102
Jackson Township	2	37	67	66	79	176	40	9	10	34
Mineral Township	0	4	49	43	28	68	15	36	19	28
Oakland Township	0	40	50	67	62	204	19	56	46	98
Oil City, City of	17	98	79	71	105	450	279	527	281	2,754
Oil Creek Township	0	7	22	47	57	76	46	15	19	58
Pinegrove Township	8	32	105	16	52	100	52	33	20	207
Pleasantville Borough	0	3	29	20	19	53	15	79	18	151
Plum Township	0	51	66	65	54	67	15	24	9	127
Polk Borough	0	7	2	0	15	42	19	64	19	113
President Township	0	28	46	95	38	58	61	117	62	90
Richland Township	0	20	37	33	30	54	18	21	20	152
Rockland Township	0	83	130	138	49	138	190	220	91	223
Rouseville Borough	0	2	1	2	4	19	22	22	41	102
Sandycreek Township	0	39	138	73	98	198	219	160	23	170
Scrubgrass Township	0	56	96	90	74	56	64	111	22	112
Sugarcreek Borough	14	33	80	109	138	221	337	347	116	919
Utica Borough	0	1	10	2	10	9	4	22	9	37
Victory Township	5	17	51	38	47	50	24	32	13	37
Source: 2023 ACS										

Table 4.3.2.5 reveals the age of housing structures in Venango County by municipality. As noted above older structures are more vulnerable to earthquakes. The smallest category housing age is the newest facilities built after 2020. For most municipalities, the majority of their facilities are built before 1970. The vulnerability of these facilities to earthquakes is

much higher than newer facilities due to the aging infrastructure, outdated building codes, and weaker materials.

All future structures will also have the potential to experience an earthquake. However, given that new structures must meet current building codes and given the expected magnitude of earthquakes in the County, property damage will affect the older facilities at a greater magnitude than newer structures.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will have no effect on the earthquake vulnerability of the current communities in Venango County.

4.3.2.6. Equity in Vulnerable Communities

Communities within Venango County's low-income communities Polk Borough, Rockland Township, and Rouseville Borough may also be at greater risk as these households often live in older or poorly constructed housing, which is more likely to sustain damage during an earthquake. People with disabilities or limited mobility also face greater challenges in evacuating during an earthquake and accessing post-disaster services. Ensuring that evacuation plans and recovery services are accessible to everyone is critical.

In terms of emergency notification, households without smartphones and lack of access to the internet will affect how people get emergency communications. Ensuring equitable access to such technologies and providing information in multiple languages and formats is critical.

4.3.3. Flood, Flash Flood, and Ice Jam

4.3.3.1. Location and Extent

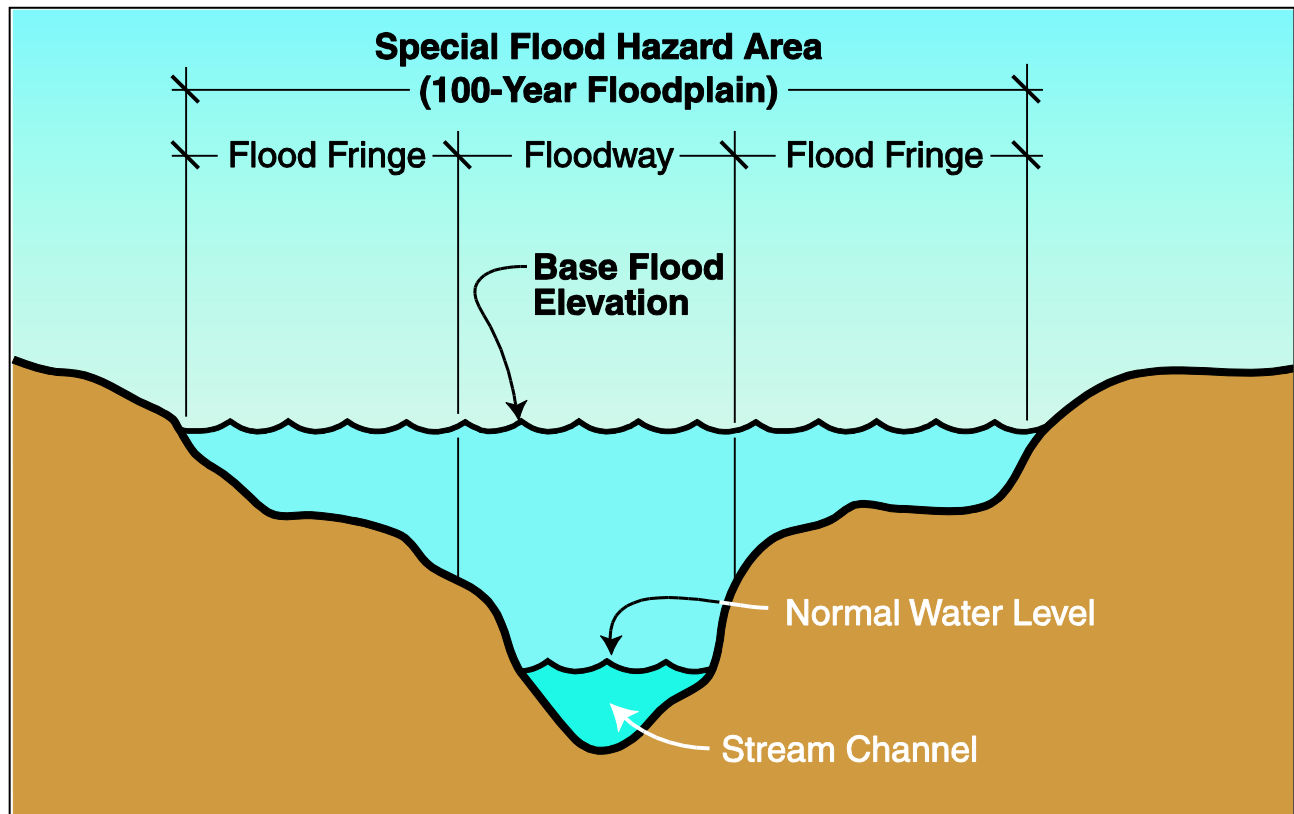
A flood is a natural event for streams and rivers. Flooding is an overflowing of water onto land that is normally dry (NOAA NSSL, 2024). It is the most frequent and costly of all natural hazards in Pennsylvania. Flooding in Pennsylvania is usually associated with abnormally high and intense rainfall amounts. However, flooding can also be caused by sudden snowmelt, landslides, dam failures, lock failures, or levee failures. Heavy rainfall events have the potential to produce localized or widespread flooding. Cloudbursts are a sudden, very heavy rainfall, usually local in nature and of brief duration (Britannica, 2024). Large events such as a broad-scale tropical storm lasting more than 24 hours may affect drainage basins several thousand square miles in size.



Flash flood conditions can result from a large amount of rainfall over a short time span. Though, a small amount of rain can also result in floods in locations where the soil is frozen or saturated from a previous wet period or if the rain is concentrated in an area of impervious surfaces such as large parking lots, paved roadways, or other densely developed areas.

Flood sources within Venango County include rivers and streams. For inland areas, excess water from snowmelt or rainfall accumulates and overflows onto stream banks and adjacent floodplains. Floodplains found in lowlands, adjacent to rivers, streams, creeks, lakes, or other large water bodies are subject to recurring floods. The size of the floodplain is described by the recurrence interval of a given flood. In assessing the potential spatial extent of flooding, it is important to know that a floodplain associated with a flood that has a 10% annual chance of occurring in a given year is smaller than the floodplain associated with a flood that has a 0.2% annual chance of occurring. The National Flood Insurance Program (NFIP), for which Flood Insurance Rate Maps (FIRM) are published, identifies the 1%-annual-chance flood, which is used to delineate the Special Flood Hazard Area and identify Base Flood Elevations (FEMA, 2022). Figure 4.3.3-1 illustrates these terms and Figure 4.3.3-2 displays the Special Flood Hazard Areas of Venango County. The Special Flood Hazard Area serves as the primary regulatory boundary used by FEMA, the Commonwealth of Pennsylvania, and Venango County local governments.

Figure 4.3.3-1: Diagram Identifying Special Flood Hazard Area, 1%-Annual-Chance (100-Year) Floodplain, Floodway, and Flood Fringe



Venango County has FEMA effective Flood Insurance Rate Maps and a Countywide Flood Insurance Study (FIS). This study was conducted as a part of FEMA's Risk Mapping, Assessment, and Planning (Risk MAP) process and went effective on January 16, 2014. As of December 2024, the FIS from January 16, 2014, is still the most up-to-date FIS. The purpose of the Risk MAP program is to assist communities nationwide to assess flood risk, encourage mitigation planning, and to strengthen local ability to make informed decisions about risk reduction. FIRMs, Flood Insurance Studies (FIS), and other flood hazard information can be obtained from the FEMA Map Service Center (<http://www.msc.fema.gov>). These maps can be used to identify the expected spatial extent of flooding from a 1%- and 0.2%-annual-chance event.

Figure 4.3.3-2: Special Flood Hazard Areas in Venango County.



Of the 31 municipalities, 30 have determined SFHAs. The only community without an SFHA is Pleasantville Borough. The streams prone to flooding include Cherry Run, East Branch Sugar Creek, Lake Creek, French Creek, Lower Two Mile Run, Oil Creek, Sage Run, Sugar Creek, and the Allegheny River.

The principal flood season is usually December through April. Most of the floods that occur are the result of heavy rain, snowmelt, ice jams or a combination of these. It is possible for large floods with duration of several days to occur at any time of the year.

Watersheds in Venango County include:

- East Sandy Creek
- French Creek
- Lower Allegheny River
- Oil Creek
- Pine Creek
- Sandy Creek
- Slippery Rock Creek
- Sugar Creek
- Wolf Creek

Watersheds in Venango County are illustrated in Figure 2.1-4. Table 4.3.3-1 indicates municipal participation in the National Flood Insurance Program. As of the end of 2021, there are 29 communities participating in the NFIP out of 31 total municipalities within Venango County; Pleasantville Borough has no mapped SFHAs and Barkeyville Borough is a non-participant despite having mapped SFHAs.

Table 4.3.3-1: National Flood Insurance Program Communities

Community	CID	Initial FIRM Identified	Current Effective Map Date
Allegheny Township	422529	09/10/84	1/16/2014
Barkeyville Borough	422728	01/16/14	1/16/2014
Canal Township	422108	02/06/91	1/16/2014
Cherrytree Township	422530	01/01/87	1/16/2014
Clinton Township	422531	09/10/84	1/16/2014
Clintonville Borough	422532	09/10/84	1/16/2014
Cooperstown Borough	420835	02/06/91	1/16/2014
Cornplanter Township	422533	05/19/87	1/16/2014
Cranberry Township	422109	04/05/88	1/16/2014
Emlenton Borough	422107	06/30/76	1/16/2014
City of Franklin	420836	09/29/78	1/16/2014
French Creek Township	422110	05/19/87	1/16/2014
Irwin Township	422534	01/16/14	1/16/2014

Jackson Township	422535	08/19/91	1/16/2014
Mineral Township	422536	01/01/87	1/16/2014
Oakland Township	422111	02/01/87	1/16/2014
City of Oil City	420837	07/05/77	1/16/2014
Oil Creek Township	422537	10/1/1986	1/16/2014
Pinegrove Township	422538	09/10/84	1/16/2014
Pleasantville Borough	No Mapped SFHA	No Mapped SFHA	No Mapped SFHA
Plum Township	422539	09/10/84	1/16/2014
Polk Borough	420838	01/01/87	1/16/2014
President Township	422112	02/06/91	1/16/2014
Richland Township	422540	09/10/84	1/16/2014
Rockland Township	422113	10/16/90	1/16/2014
Rouseville Borough	420839	05/19/87	1/16/2014
Sandycreek Township	422541	10/16/90	1/16/2014
Scrubgrass Township	422542	08/05/91	1/16/2014
Sugarcreek Borough	420840	05/19/87	1/16/2014
Utica Borough	420841	03/04/91	1/16/2014
Victory Township	422543	09/24/84	1/16/2014

4.3.3.2. Range of Magnitude

Both localized and widespread floods are considered hazards when people and property are affected. Injuries and deaths can occur when people are swept away by flood currents or bacteria and disease are spread by moving or stagnant floodwaters (Doocy et al., 2013). Most property damage results from inundation by sediment-filled water. A large amount of rainfall over a short time span, like a cloudburst, can result in flash flood conditions. Small amounts of rain can result in floods in locations where the soil is frozen or saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas (MRCC, 2022).

Several factors determine the severity of floods, including rainfall intensity and duration, topography, ground cover, and rate of snowmelt (Doocy et al., 2013). Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. Most storms track from west to east, but some originate in the Great Lakes or Atlantic Ocean. Ice jams and snowmelt can help cause flash floods. A deep snowpack increases runoff produced by melting snow. Heavy spring rains falling on melting snowpack can produce flash flooding. Melting snowpack may also contribute to floods produced by ice jams (NOAA NSSL, 2024). As ice or debris moves downstream, it may get caught on any sort of obstruction to the water flow. When this occurs, water can be held back, causing upstream flooding. When the jam finally breaks, flash flooding can occur downstream. Ice jams are common during the winter and spring along rivers, streams, and creeks (NOAA NWS, 2024). Ice jams are particularly an issue on Pine Creek.

Rainfall in Pennsylvania is about average for the eastern United States. The American Meteorological Society classifies rainfall intensity into three categories (2012):

- o Light rain – when precipitation rate is .01 to .10 inches/hour
- o Moderate rain – when precipitation rate is .11 to .30 inches/hour
- o Heavy rain – when precipitation rate is > .30 inches/hour

While significant flood events are typically associated with heavy rain, rainfall events of lesser intensity may also cause flooding given sufficient duration. Flood effects can be volume- or force-related, although both play a factor in all flooding events. Flood events that occur along larger streams with wide floodplains tend to result in large-scale inundations, causing widespread damage through soaking and silt deposits in homes, businesses, and industrial plants. The impacts of these events are typically a function of how much water was involved instead of the force of that moving water. On the other hand, flash floods resulting from bursts of heavy rainfall happen suddenly and powerfully as they sweep vehicles away, uproot trees, damage buildings and structures, and more (The Weather Channel, 2015). Flash floods are often unpredictable and, particularly if they occur at night, can cause major panic and loss of life due to low visibility (Špitalar et al., 2014). These events are common in hilly regions where runoff paths are steep, allowing water to reach higher velocity as it flows over the ground. Frozen or very dry surfaces can increase normal runoff velocities as well, particularly in small drainage areas, as water is not able to infiltrate the soil easily (Chen et al., 2017). In addition to slopes and frozen ground, ice and debris jams in channels and culverts can lead to quick-rising floods if they significantly obstruct the flow of water (NOAA NWS, 2024).

Floods are naturally occurring events that benefit riparian systems that have not been disrupted by human actions; benefits include groundwater recharge and the introduction of nutrient rich sediment improving soil fertility (WMO, 2006). However, the destruction of riparian buffers, changes to land use and landcover throughout a watershed, and introduction of chemical or biological contaminants that often accompany human presence cause environmental harm when floods occur. Hazardous material facilities are potential sources of contamination during flood events (see Section 4.3.13). Other environmental impacts of flooding include: water-borne diseases, heavy siltation, erosion of streambanks and riverbeds, destruction of aquatic habitat, damage to water and sewer infrastructure located in floodplains, damage or loss of crops and vegetation, and drowning of both humans and animals (Washington State Department of Ecology, 2022). Extreme rain events can also lead to the failure of manure lagoons, which are typically built for 25-year storms. These failures can lead to significant runoff that may lead to harmful algae blooms in local waterways.

There are several examples of possible worst-case scenario flooding events in Venango County, but winter floods and ice jam are the most common. Major flooding occurs as a result of heavy rainfall on dense snowpack throughout contributing watersheds, although the snowpack is generally moderate during most winters. During these events massive

damage and destruction to structures can be caused. Many individuals throughout could potentially be left homeless and many businesses, located primarily within the incorporated municipalities, could be destroyed resulting in a reduction in economic activity, an increase in unemployment, and lower personal incomes.

The potential impacts of Floods, Flash Floods, and Ice Jams on community lifelines are as follows:

Table 4.3.3.2-1: Most Likely Lifelines Impacted by Floods, Flash Floods, and Ice Jams	
	NOTES
	Government operations and facilities, including police, fire, and search and rescue are needed for response and recovery. Actions to protect communities are focused on proper planning of development in or near the floodplain. This includes incorporating flood mitigation into local planning by including flood considerations in infrastructure development and improving stormwater management.
	Significant risk to buildings is posed and can create issues for food and water access. Ways to mitigate damage to this lifeline include limiting or restricting floodplain development and adopting building codes to ensure structures can withstand flood impacts.
	Transportation routes will be affected due to direct damage from flooding and potential compounding hazards like landslides and transportation incidents. Potential mitigation actions should be focused on reducing impacts to roadways and inspections to ensure infrastructure meets specifications to handle severe impacts.
	Floods may affect hazardous materials storage due to damage to facilities. Mitigation for this lifeline is similar to the others and should be focused on increasing the resiliency of sites through specific building codes and development regulations that either provide protection or result in hazardous sites being located outside flood hazard areas.

Table 4.3.3.2-2 shows the Critical Facilities and Community Lifelines that are vulnerable to flooding in Venango County. These facilities are also noted in [Appendix E](#).

Table 4.3.3.2-2 Critical Facilities and Community Lifelines That Are Vulnerable to Flooding				
Name	Address	Municipality	Zip Code	Type
THE FARM	2675 STONY HILL RD	Canal		Airports
Rouseville Volunteer Fire Department	7 MECHANIC STREET	Rouseville	16301	Fire Stations
Cooperstown Borough Building	142 Riverside Drive	Cooperstown	16317	Municipal Buildings
Jackson Township Building	217 Creek Road	Jackson	16317	Municipal Buildings
Kennerdell VFD	264 Main Street	Polk	16342	Nursing Homes
The Caring Place	103 NORTH 13TH STREET	Franklin	16323	Nursing Homes

If critical lifelines such as the airport, fire stations, municipal buildings, or nursing homes in Venango County were impacted by a hazard event, the consequences could be severe, particularly for vulnerable populations. Disruption to the airport could hinder emergency medical transport and supply deliveries, especially in rural areas with limited access. Fire stations and municipal buildings serve as operational hubs for emergency response and coordination—if compromised, response times and public safety services would be significantly delayed. Nursing homes, which house high-risk elderly populations, are especially vulnerable; loss of power, HVAC, or medical support systems could lead to life-threatening conditions. These vulnerabilities, as outlined in the county's assessment, underscore the need for resilient infrastructure and continuity planning for essential services.

4.3.3.3. Past Occurrence

Venango County has a long history of flooding problems due to the Allegheny River, French Creek, Sugar Creek, and their many tributaries being located in Venango County. Thus, the County has suffered damage from numerous major overbank floods and localized flash flooding. This has caused much inconvenience and hardship. There are also bridges and culverts that get blocked with debris and cause backup flooding during a large storm. Property damage has been heavy at times, but no loss of life due to flooding has been recorded in Venango County. Since 2020, there has been additional \$51,000 recorded in the National Oceanic and Atmospheric Administration (NOAA) data center.

Additional data from NOAA is included in Table 4.3.3-3. A total of 5 out of the 15 Presidential Disaster and Emergency Declarations affecting Venango County have been in response to flood hazard events (see Table 4.2-1). Figure 4.3.3-3 provides the locations of previous flash floods throughout the County.

Table 4.3.3-1: History of Flooding in Venango County, 1883-2024 (NOAA NCEI, 2024).			
Date	Type	Notes	Estimated Cost
February 4, 1883	Flood	Ice jam flooding	N/A
June 5, 1892	Flood	Heavy rains caused floods and fires in Oil City; rain washed out dam on Oil Creek; 60 people dead, hundreds injured and homeless.	N/A
March 1, 1910	Flood	Ice gorge forced water from French Creek into Utica.	N/A
March 25, 1913	Flood	Flooding in Franklin, Oil City and Utica	N/A
February 1917	Flood	Ice jam flooding in Franklin	N/A
June 28, 1924	Flood	Heavy storm causes flooding damage in Oil City	\$250,000
January -March 1926	Flood	Ice jams caused flooding in Oil City, Reno and Franklin	\$2,500,000
February 1936	Flood	Ice jam on Oil Creek	N/A
April 6, 1947	Flood	On Sugarcreek	N/A
July 14/15, 1958	Flood	Polk, Rouseville, Sugarcreek and Franklin impacted	N/A
January 1959	Flood	Ice jam on the Allegheny River flooded Franklin, Polk, Sugar Creek, and Oil Creek. Utica, Cooperstown, and Sugarcreek Village had floodwaters.	N/A
May 23, 1977	Flood	Northern Venango County	
June 8/9, 1981	Flood	Cranberry Township, Sugarcreek Borough, Oil City and Franklin flooded	\$15,000,000
February 1, 1982	Flash Flood	Oil Creek rose without warning and flooded streets of Oil City	N/A
January 29, 1994	Flash Flood	Oil City	\$50,000
August 13, 1994	Flash Flood	Countywide	\$500,000
August 27, 1994	Flood	Centerville	N/A
June 3, 1995	Flood/Flash Flood	Oil City	N/A
June 3, 1995	Flood/Flash Flood	Dempseytown	N/A
June 10, 1995	Flood/Flash Flood	Kennerdell	N/A
August 15, 1995	Flood/Flash Flood	Wallaceville	N/A

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January 18, 1996	Flash Flood	Oil City	N/A
January 19, 1996	Flash Flood	Ice jam in Oil Creek State Park	\$120,000
July 1996	Flood	Chub Run flooded	N/A
May 11, 1996	Flash Flood	Polk	N/A
July 19, 1996	Flash Flood	Franklin	\$50,000,000
July 19, 1996	Flash Flood	Countywide	N/A
September 9, 1996	Flash Flood	Kennerdell	N/A
September 28, 1996	Flash Flood	Oil City	N/A
January 23, 1997	Flood	PAZ008	\$8,000
June 12, 1997	Flash Flood	Cooperstown	N/A
August 2, 2000	Flood	Oil City	\$5,000
June 21, 2001	Flood	Franklin	\$150,000
May 12, 2002	Flood	Sugarcreek	\$10,000
June 12, 2003	Flash Flood	President	N/A
June 12, 2003	Flash Flood	Emlenton	N/A
July 21, 2003	Flood	Venango	\$5,000
July 21, 2003	Flash Flood	Franklin	N/A
July 22, 2003	Flash Flood	Oil City	N/A
August 5, 2003	Flash Flood	Chapmanville	N/A
August 7, 2003	Flash Flood	Nickleville	N/A
August 9, 2003	Flash Flood	Franklin	N/A
August 16, 2003	Flash Flood	Franklin	N/A
August 26, 2003	Flash Flood	Franklin	\$110,000
September 1, 2003	Flash Flood	Barkeyville	N/A
September 1, 2003	Flash Flood	Emlenton Station	N/A
November 19, 2003	Flash Flood	Pleasantville	N/A
May 20, 2004	Flash Flood	Oil City	N/A
May 24, 2004	Flash Flood	Utica	N/A
July 12, 2004	Flood	PAZ008	N/A
July 12, 2004	Flood	PAZ008	N/A
July 18, 2004	Flash Flood	Franklin	\$5,000
August 28, 2004	Flood	PAZ008	\$4,000
September 8, 2004	Flood	PAZ008	\$50,000
September 17, 2004	Flood	PAZ008	\$15,000
June 10, 2005	Flash Flood	Oil City	N/A
June 30, 2005	Flash Flood	Franklin	N/A
July 31, 2006	Flash Flood	Sugarcreek	\$15,000
August 29, 2006	Flash Flood	Oil City	\$1,300,000
March 14, 2007	Flood	Pleasantville	N/A
March 15, 2007	Flood	Oil City	N/A
February 6, 2008	Flood	Bradleytown	\$25,000
February 6, 2008	Flood	Mc Kenzie Corners	\$25,000

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February 11, 2009	Flood	Oil City	\$50,000
February 18, 2011	Flash Flood	Oil City	\$15,000
February 28, 2011	Flood	Barkeyville	\$100,000
March 5, 2011	Flood	Cherrytree	\$1000
May 15, 2011	Flood	Victory	\$5000
May 15, 2011	Flood	Polk Junction	\$5000
January 27, 2012	Flood	Rouseville	\$25,000
June 27, 2013	Flood	Franklin	N/A
June 28, 2013	Flash Flood	Clintonville	N/A
June 28, 2013	Flash Flood	Emlenton Station	N/A
August 28, 2013	Flood	Rocky Grove	N/A
January 10, 2014	Flood	Rockmere	\$2000
February 21, 2014	Flood	Oil City	\$50,000
May 21, 2014	Flood	Thornburgh	N/A
June 12, 2014	Flood	Galloway City	\$2000
June 24, 2014	Flood	Kaneville	\$10,000
June 24, 2014	Flood	Grandview	\$25,000
June 24, 2014	Flash Flood	Cherrytree	\$2000
June 24, 2014	Flash Flood	Kaneville	\$15,000
June 25, 2014	Flood	Rouseville	\$10,000
July 27, 2014	Flood	Polk Junction	\$10,000
September 2, 2014	Flood	Rockmere	\$3,000
June 16, 2015	Flash Flood	Green Oaks	\$5,000
June 16, 2016	Flash Flood	Grandview, Reno	\$10,000
January 12, 2017	Flash Flood	Grandview	\$5,000
May 28, 2017	Flash Flood	Hannasville	\$10,000
June 19, 2017	Flood	Rockmere	\$0
May 31, 2018	Flash Flood	President	\$0
July 2, 2018	Flash Flood	Eagle Rock	\$0
September 7, 2018	Heavy Rain	Seneca	\$0
July 7, 2019	Flash Flood	Coal Hill, Seneca	\$10,000
July 19, 2019	Flash Flood	Seneca, Oil City	\$20,000
July 16, 2021	Flash Flood	Polk JCT	\$0
July 17, 2021	Flash Flood	Demseytown	\$0
August 13, 2021	Flash Flood	Walnut Bend	\$50,000
September 4, 2022	Flash Flood	Wesley	\$0
April 11, 2024	Flash Flood	Emlenton Station	\$1,000
Total:			\$704,888,000

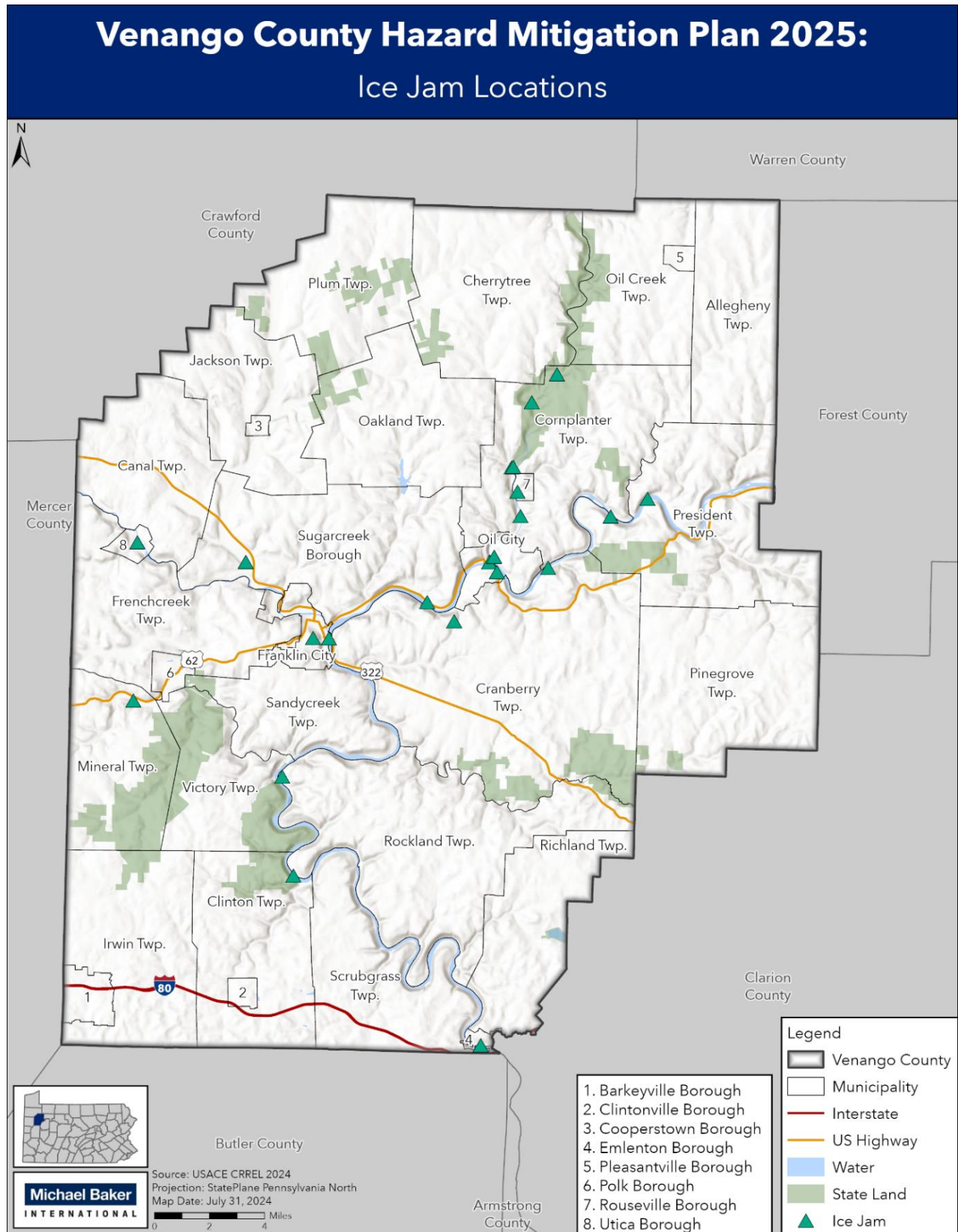
The Hazard Mitigation Team collects data by NOAA and anecdotal information regarding the past occurrences of flooding in Venango County:

- February 4, 1883: Ice jam flooding
- June 5, 1892: Heavy rains caused floods and fires in Oil City; rain washed out dam on Oil Creek; 60 people dead, hundreds injured and homeless.
- March 1, 1910: Sudden rise in water from French Creek brought Utica Borough its worst flood. Ice gorge forced water from French Creek into Utica.
- March 25, 1913: Flooding in Franklin – flood stage at 22.4 feet; flooding in Oil City force businesses to close and people to leave their homes. Utica flooded.
- February, 1917: Highest recorded flood stage to date in Franklin (24 feet). Flooding caused by ice jam.
- June 28, 1924: Heavy storm causes flooding damage in Oil City; over \$250,000 in damages; flooding cause landslides.
- January/February/March, 1926: Ice jams cause by freezing and thawing caused flooding in Oil City, Reno and Franklin. Damages estimated at \$2,500,000.
- February 1936: Ice jam on Oil Creek cause flooding; ice piled up 20 feet high.
- February 27, 1936: Ice piled up on River Avenue in Emlenton; major damage caused.
- April 6, 1947: Flooding at Sugarcreek.
- July 14/15, 1958: Worst flood of the century in the Polk area. Heavy rains reached torrential proportions. One life lost. Bridges washed out, homes damaged. Rouseville, Sugarcreek, and Franklin also flooded.
- January 1959: Heavy rainfall caused a break up of ice on French Creek and then flooding when it met the stable ice in the Allegheny River. Ripped out billboards and forced industries to close in Franklin. Serious power failure on January 21, causing Franklin Hospital and Polk Center to go to emergency power. Sugar Creek and Oil Creek were flooded. Utica, Cooperstown, and Sugarcreek Village had floodwaters.
- May 23, 1977: Northern Venango County hit by brunt of storm. Damage to roads near Cherrytree and Kaneville areas. Five feet of water covered roads. Required several weeks of repairs.
- June 8/9, 1981: Rains ripped up highways and destroyed homes causing 15 million in damages. 4.5 inches of rain cause streams to flood. Areas affected include Cranberry Township, Sugarcreek Borough, Oil City, Franklin, and Fertigs.
- February 1, 1982: Oil Creek rose without warning and flooded streets of Oil City; 6 feet of water on Seneca Street; Worst flood in decades; destroyed businesses and homes; damages soared to many millions of dollars.
- January 19, 1996: Ice jam formed near Petroleum Centre Bridge in Oil Creek State Park; large cakes of ice and water closed the road from Rynd Farm to the park.

- July 1996: Chubb Run flooded part of Route 8 in Franklin cause major damage. West First Street in Oil City, Shaffer Run area of Reno, and Cranberry Township all damaged by flooding. Damages in the millions.
- August 29, 2006: Sandy Lick Creek flooded following 2 inches of rain and flooded Polk and Franklin Townships. Hundreds of inhabitants of the two municipalities were evacuated when the Piffer Dam was assessed as unsafe by the state DEP and sewage and gasoline made their way into local waterways.
- February 21, 2014: Ice jam formed on Oil Creek and the subsequent flooding caused disruption in Oil City and elsewhere. Traffic was rerouted and at least 70 people were evacuated from buildings in the city.
- July 19-20, 2019: The County EMA team worked closely with local EMCs to collect damage assessments. Community residents were urged to contact the Venango County 211 hotline with damage details to be sent to the local EMC as well as insurance companies. The storm also caused Deep Hollow Road (Route 3025) from Bredinsburg Road to Route 322 in Cranberry Township to close.
- July 16-17, 2021: Multiple roads in the area had flooding issues. Pump Station Road was made impassable due to water over the road (NOAA NCEI, 2024).
- August 13, 2021: Trained spotter reports Cherry Run Creek out of its banks in Cornplanter Township. Bridge washed out. Route 8 also closed from Route 417 to intersection of Route 227 (NOAA NCEI, 2024).
- September 4, 2022: Heavy rain caused roads in the area north of Wesley to flood (NOAA NCEI, 2024).
- April 11, 2024: Route 208 flooded (NOAA NCEI, 2024).

Furthermore, Venango County has had a history of ice jams occurring throughout the county, especially within the Allegheny River. Figure 4.3.3-4 displays the location of ice jams.

Figure 4.3.3.3-1: Venango County Ice Jam Locations



Floods are the most common and costly natural catastrophe in the United States. The best way for citizens to protect their property against flood losses is to purchase flood insurance through the NFIP. Congress established the NFIP in 1968 to help control the growing cost of federal disaster relief. The NFIP is administered by the Federal Emergency Management Agency (FEMA), part of the U.S. Department of Homeland Security. The NFIP offers federally backed flood insurance in communities that adopt and enforce effective floodplain management ordinances to reduce future flood losses.

Since 1983, the chief means of providing flood insurance coverage has been a cooperative venture of FEMA and the private insurance industry known as the Write Your Own (WYO) Program. This partnership allows qualified property and casualty insurance companies to “write” (that is, issue) and service the NFIP’s Standard Flood Insurance Policy (SFIP) under their own names.

Today, nearly 50 WYO insurance companies issue and service the SFIP under their own names. More than 5 million federal flood insurance policies are in force. These policies represent \$1.3 trillion in flood insurance coverage for homeowners, renters, and business owners throughout the United States and its territories (FEMA, 2024a). The NFIP provides flood insurance to individuals in communities that are members of the program. Membership in the program is contingent on the community adopting and enforcing floodplain management and development regulations.

Information on NFIP premiums and coverage, prior claims, and substantial damage claims provide additional information on past flood occurrences. Table 4.3.3-1 shows this information for each municipality with policies in force and claims. For more information on Venango County’s compliance with the NFIP, please see [Section 5.2.1.1](#).

The NFIP identifies properties that frequently experience flooding. The following definition of RL and SRL properties from the Hazard Mitigation Assistance (HMA) Unified Guidance from July 2024 and reflects changes made in the Biggert-Waters Flood Insurance Reform Act of 2012. A **Repetitive Loss (RL)** property is a structure covered by a contract for flood insurance made available under the NFIP that:

- Has incurred flood-related damage on two occasions, in which the cost of repair, on average, equaled or exceeded 25% of the value of the structure at the time of each such flood event; and
- At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

A **Severe Repetitive Loss (SRL)** structure is a structure that is covered under an NFIP policy and has incurred flood-related damage:

- For which four or more separate claims payments have been made under flood insurance coverage with the amount of each claim (including building and

contents payments) exceeding \$5,000 and with the cumulative amount of such claims payments exceeding \$20,000; or

- For which at least two separate flood insurance claims payments (building payments only) have been made, with the cumulative amount of such claims exceeding the value of the insured structure.

As of April 2024, there were 16 repetitive loss buildings in Venango County. Of the 16, 4 are in Jackson Township. There are repetitive loss properties in 7 of the 31 municipalities. Table 4.3.3-2 contains the number of repetitive loss buildings in each municipality according to data provided by FEMA. Currently, there are three Severe Repetitive Loss Properties identified in Venango County.

Table 4.3.3-2: Summary of the Number and Type of Repetitive Loss Properties by Municipality (FEMA, 2024a)

MUNICIPALITY	TYPE			SUM OF REPETITIVE LOSS PROPERTIES
	2-4 FAMILY	NON- RESIDENTIAL	SINGLE FAMILY	
Clinton Township	0	0	1	1
Cranberry Township	0	0	1	1
Franklin, City of	0	0	1	1
Jackson Township	0	0	4	4
Oakland Township	0	0	1	1
Oil City, City of	0	2	0	2
Sugarcreek Borough	0	0	6	6
Total	0	2	14	16

4.3.3.4. Future Occurrence

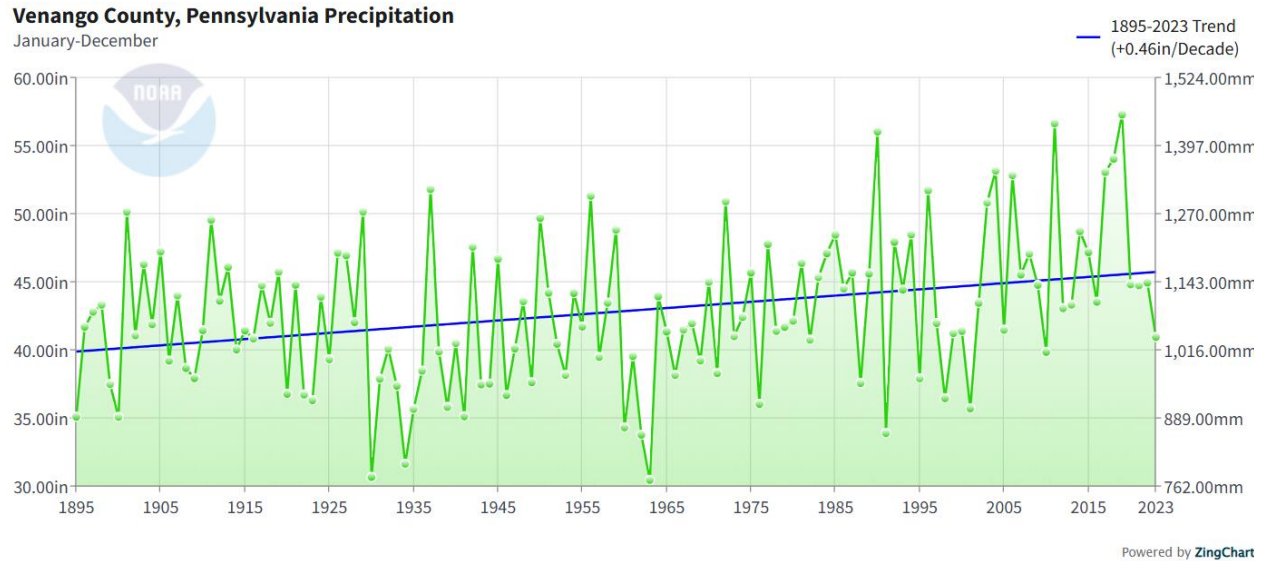
In Venango County, flooding occurs commonly and can occur during any season of the year. Flooding is currently the highest-risk hazard in Pennsylvania, and risks are projected to increase in the future (PA DEP, 2021). It can happen during any season of the year, with serious flooding occurring along one or more of Pennsylvania's major rivers or streams every two to three years. It is not unusual for such events to happen several years in succession. Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and related probability of occurrence. Historical records are used to determine the probability of occurrence (percent chance) for a flood of specific extent to occur.

The NFIP recognizes the 1%-annual-chance flood, also known as the *base flood*, as the standard for identifying properties subject to federal flood insurance purchase requirements. A 1%-annual-chance flood is a flood which has a 1% chance of occurring over a given year. FIRMs published by FEMA can be used to identify areas subject to the 1%- and 0.2%-annual-chance flooding. Areas subject to 2%- and 10%-annual-chance events are not shown on maps; however, water surface elevations associated with these events are included in the flood source profiles contained in associated Flood Insurance Study Reports. The most recent Flood Insurance Study for each county in Pennsylvania is available from the FEMA Map Service Center (<http://www.msc.fema.gov>).

Since heavy precipitation events can be precursors to, or causes of, flooding events, changes to precipitation rates can be illustrative of future potential occurrence of flooding conditions, although this relationship is complex as additional factors including soil moisture and land cover affect flooding occurrence as well. Figure 4.3.3-5 shows precipitation in Venango County from 1895 to 2023. Overall, Venango County has seen a 0.46-inch increase in precipitation from 1895 to 2023. Furthermore, the 2023 PA State HMP estimates that Venango County experienced an increased rate of 10.75% or more of precipitation from 1901 to 2020.

The mean annual precipitation change for the western half of the state (including Venango County) is projected to be between 8 to 10 percent by 2041-2070 relative to 1971-2000, as modeled with CMIP5 and statistically downscaled under the IPCC RCP8.5 emissions scenario (Shortle et al. 2015). Precipitation is expected to increase in all seasons with large increases in winter (14%) and small increases in summer and fall precipitation. It is highly likely that months of above-normal precipitation will increase (Shortle et al. 2015).

Figure 4.3.3.4-1: Precipitation from 1895 to 2023 in Venango County (NOAA NCEI, 2024).



There are also some increasing trends in maximum streamflow in the Northeast United States consistent with this increase in observed extreme precipitation (Wehner et al. 2017). The trend of increased frequency and magnitude of heavy precipitation events is highly likely to continue (PA DEP, 2021). This is due to the increase in atmospheric water vapor from a warming climate which results in a greater amount of rainfall falling in precipitation events. Globally, annual maximum daily precipitation increased 8.5% over the last 110 years, with extreme precipitation events increasing as well (Easterling et al. 2017).

Precipitation is expected to increase in all seasons with large increases in winter (14%) and small increases in summer and fall precipitation. It is highly likely that months of above-normal precipitation will increase (Shortle et al. 2015). Changes to runoff are more uncertain but expected to be a small to zero increase. It is highly probable there will be increased risk of flooding for Venango County in the future, especially in the winter and spring months. Consistent with increasing precipitation, the intensity and magnitude of river flooding is also expected to increase. Flash flooding risks are also expected to increase due to these changes in the amount and intensity of precipitation and changes to runoff volume. Therefore, the future occurrence of floods in Venango County can be characterized as highly likely as defined by the Risk Factor Methodology probability criteria (see Table 4.4-1).

4.3.3.5. Vulnerability Assessment

Venango County is vulnerable to flooding that causes loss of lives, property damage, and road closures. For purposes of assessing vulnerability, the County focused on community assets that are located in the 1%-annual-chance floodplain. While greater

and smaller floods are possible, information about the extent and depths for this floodplain is available for all municipalities countywide, thus providing a consistent basis for analysis. Flood vulnerability maps are each applicable local municipality, showing the 1%-annual-chance flood hazard area and addressable structures, critical facilities, and transportation routes within it, are located in [Appendix D](#). These maps were created using the 2014 Effective DFIRM data.

Flood events are also a major cause for road closures in the County and its municipalities. Affected areas of roadway may vary from a few feet for only a few hours (as in the case of flash flooding) to several hundred feet for a few days (as in the case of riverine flooding). Road closures limit accessibility to certain areas of the County, which in turn delays the provision of emergency services to the residents in those areas. In addition, despite posted signs warning drivers to stay out of floodwaters, inevitably there are individuals who must be rescued from their cars that become stranded in floodwaters. Other concerns during a flood include the safety of mobile homes and trailers, as they are typically lightweight and unanchored. Table 4.3.3-6 provides the number of mobile homes in the floodplain by jurisdiction.

Table 4.3.3.5-1: Mobile Home Vulnerability in Venango County.

MUNICIPALITY	TOTAL MOBILE HOMES	MOBILE HOMES IN SFHA	PERCENT MOBILE HOMES
Allegheny Township	23	0	0%
Barkeyville Borough	28	0	0%
Canal Township	94	3	3%
Cherrytree Township	104	5	5%
Clinton Township	81	3	4%
Clintonville Borough	84	0	0%
Cooperstown Borough	8	4	50%
Cornplanter Township	70	13	19%
Cranberry Township	317	9	3%
Emlenton Borough	6	0	0%
Franklin City, City of	19	4	21%
Frenchcreek Township	136	2	1%
Irwin Township	90	0	0%
Jackson Township	131	7	5%
Mineral Township	69	1	1%
Oakland Township	72	4	6%
Oil City, City of	6	5	83%
Oil Creek Township	91	0	0%
Pinegrove Township	106	1	1%

Table 4.3.3.5-1: Mobile Home Vulnerability in Venango County.

MUNICIPALITY	TOTAL MOBILE HOMES	MOBILE HOMES IN SFHA	PERCENT MOBILE HOMES
Pleasantville Borough	50	0	0%
Plum Township	81	2	2%
Polk Borough	27	4	15%
President Township	211	5	2%
Richland Township	77	0	0%
Rockland Township	171	2	1%
Rouseville Borough	12	6	50%
Sandycreek Township	115	1	1%
Scrubgrass Township	111	2	2%
Sugarcreek Borough	204	11	5%
Utica Borough	9	5	56%
Victory Township	68	2	3%
TOTAL	2,671	101	4%

Oil City contains the highest percentage of mobile homes in the SFHA with 83%. In second place was Utica Borough with 56%, followed by Cooperstown Borough and Rouseville Borough, which tied with 50%. The remaining municipalities had percentages of mobile homes in the SFHA below 25%.

Cornplanter Township contains the most mobile homes in the SFHA with a total of 13, followed by Sugarcreek Borough with 11. The remaining municipalities contain less than 10 mobile homes in the SFHA with a total of 8 municipalities (Allegheny Township, Barkeyville Borough, Clintonville Borough, Emlenton Borough, Irwin Township, Oil Creek Township, Pleasantville Borough, and Richland Township) containing none in the SFHA.

Table 4.3.3.5-2 and Table 4.3.3.5-3 displays the number of structures, critical facilities, and populations intersecting the SFHA. The number of vulnerable structures was calculated by overlaying the structures with the SFHA. Similarly, the estimated population in the SFHA was calculated by overlaying the centroids of the 2020 Census blocks with the SFHA; while clearly an estimate, using the block centroid helps to minimize overestimation of flood prone populations. One community, Utica Borough, has 33% of its structures in the SFHA, and Polk Borough has 20% of its facilities in the SFHA. Of the County's 29,484 structures, only 738 are in the SFHA, which is about 3%.

Canal Township, Cooperstown Borough, Jackson Township, Polk Borough, and Rouseville Borough each have one critical facility within the SFHA. While Franklin City has 2 critical facilities within the SFHA. Of the municipalities, the City of Franklin has the

most critical facilities with 33, followed by City of Oil City with 18 and then tied between Cranberry Township and Sugarcreek Borough with 14. Overall, the County has a total of 163 critical facilities with only 7 of those located in the SFHA.

Table 4.3.3.5-2 Total Structures and Critical Facilities in the SFHA in Venango County.						
MUNICIPALITY	TOTAL STRUCTURES	STRUCTURES IN SFHA	PERCENT IN SFHA	TOTAL CFS	CFS IN SFHA	PERCENT CFS IN SFHA
Allegheny Township	225	2	1%	1	0	0%
Barkeyville Borough	159	0	0%	1	0	0%
Canal Township	522	6	1%	3	1	33%
Cherrytree Township	836	11	1%	5	0	0%
Clinton Township	563	17	3%	4	0	0%
Clintonville Borough	244	0	0%	2	0	0%
Cooperstown Borough	215	27	13%	2	1	50%
Cornplanter Township	1,316	46	3%	7	0	0%
Cranberry Township	3,487	55	2%	18	0	0%
Emlenton Borough	379	1	0%	4	0	0%
Franklin City, City of	2,988	50	2%	33	2	6%
Frenchcreek Township	899	36	4%	4	0	0%
Irwin Township	727	1	0%	5	0	0%

Table 4.3.3.5-2 Total Structures and Critical Facilities in the SFHA in Venango County.						
MUNICIPALITY	TOTAL STRUCTURES	STRUCTURES IN SFHA	PERCENT IN SFHA	TOTAL CFS	CFS IN SFHA	PERCENT CFS IN SFHA
Jackson Township	570	21	4%	3	1	33%
Mineral Township	330	1	0%	1	0	0%
Oakland Township	747	10	1%	2	0	0%
Oil City, City of	4,757	54	1%	18	0	0%
Oil Creek Township	496	0	0%	1	0	0%
Pinegrove Township	698	0	0%	5	0	0%
Pleasantville Borough	471	0	0%	3	0	0%
Plum Township	552	6	1%	1	0	0%
Polk Borough	260	53	20%	6	1	17%
President Township	775	38	5%	2	0	0%
Richland Township	602	0	0%	3	0	0%
Rockland Township	1,465	37	3%	5	0	0%
Rouseville Borough	253	45	18%	1	1	100%
Sandycreek Township	1,235	11	1%	6	0	0%

Table 4.3.3.5-2 Total Structures and Critical Facilities in the SFHA in Venango County.						
MUNICIPALITY	TOTAL STRUCTURES	STRUCTURES IN SFHA	PERCENT IN SFHA	TOTAL CFS	CFS IN SFHA	PERCENT CFS IN SFHA
Scrubgrass Township	733	26	4%	2	0	0%
Sugarcreek Borough	2,516	138	5%	14	0	0%
Utica Borough	126	42	33%	3	0	0%
Victory Township	338	4	1%	1	0	0%
TOTAL	29,484	738	3%	163	7	4%
*CFS stands for Critical Facilities						

The total population within the SFHA is 3,435 out of 50,454 people, which is 7% of the total population. Jackson Township has the highest percentage of population in the SFHA with 33%, following this is Cooperstown Borough with 32%, then Cornplanter Township with 25%, and finally Scrubgrass Township with 24%. The remaining municipalities have a percentage below 20% for population in the SFHA.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will have no effect on the flood vulnerability of the current communities in Venango County. However, the hazard will still affect the current population in the county significantly with increase in flood occurrences.

Table 4.3.3.5-3: Population in SFHA in municipalities of Venango County.

MUNICIPALITY	POPULATION FROM SUBDIVISION SUMMARY 2020	POPULATION IN SFHA	PERCENT POPULATION IN SFHA
Allegheny Township	284	0	0%
Barkeyville Borough	188	0	0%
Canal Township	937	0	0%
Cherrytree Township	1,308	32	2%
Clinton Township	953	57	6%
Clintonville Borough	439	6	1%
Cooperstown Borough	399	126	32%
Cornplanter Township	2,320	571	25%
Cranberry Township	6,342	282	4%
Emlenton Borough	611	37	6%
Franklin City, City of	6,077	307	5%
Frenchcreek Township	1,427	41	3%
Irwin Township	1,253	0	0%
Jackson Township	917	299	33%
Mineral Township	498	22	4%
Oakland Township	1,361	133	10%
Oil City, City of	9,613	321	3%
Oil Creek Township	753	50	7%
Pinegrove Township	1,328	43	3%
Pleasantville Borough	846	0	0%
Plum Township	903	165	18%
Polk Borough	634	0	0%
President Township	448	74	17%

Table 4.3.3.5-3: Population in SFHA in municipalities of Venango County.

MUNICIPALITY	POPULATION FROM SUBDIVISION SUMMARY 2020	POPULATION IN SFHA	PERCENT POPULATION IN SFHA
Richland Township	777	41	5%
Rockland Township	1,243	29	2%
Rouseville Borough	457	63	14%
Sandycreek Township	2,055	0	0%
Scrubgrass Township	749	177	24%
Sugarcreek Borough	4,775	543	11%
Utica Borough	184	0	0%
Victory Township	375	16	4%
TOTAL	50,454	3435	7%

4.3.3.6. Equity in Vulnerable Communities

Regarding equity, residents living within mobile homes or other manufactured homes will experience risks associated with flooding at a disproportionate rate compared to other housing types due to their susceptibility of damage from floodwaters. Furthermore, communities within Venango County with higher concentrations of low-income households could be more susceptible to flooding. These households are more likely to live in housing structures with lower-quality infrastructure. Additionally, Populations of people experiencing homelessness will require extra help finding locations to shelter in place. Elderly households or households with people with disabilities may also face additional challenges due to mobility issues if evacuation is needed.

4.3.4. Landslide

4.3.4.1. Location and Extent

A landslide is the downward and outward movement of slope-forming soil, rock, and vegetation reacting to the force of gravity. Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melt, steepening of slopes due to construction, erosion, earthquakes, and changes in groundwater levels. Mudflows, mudslides, rockfalls, rockslides, and rock topples are all forms of landslide (DCNR, 2020a). Landslides usually occur in areas of Venango County with moderate to steep slopes and during high precipitation.



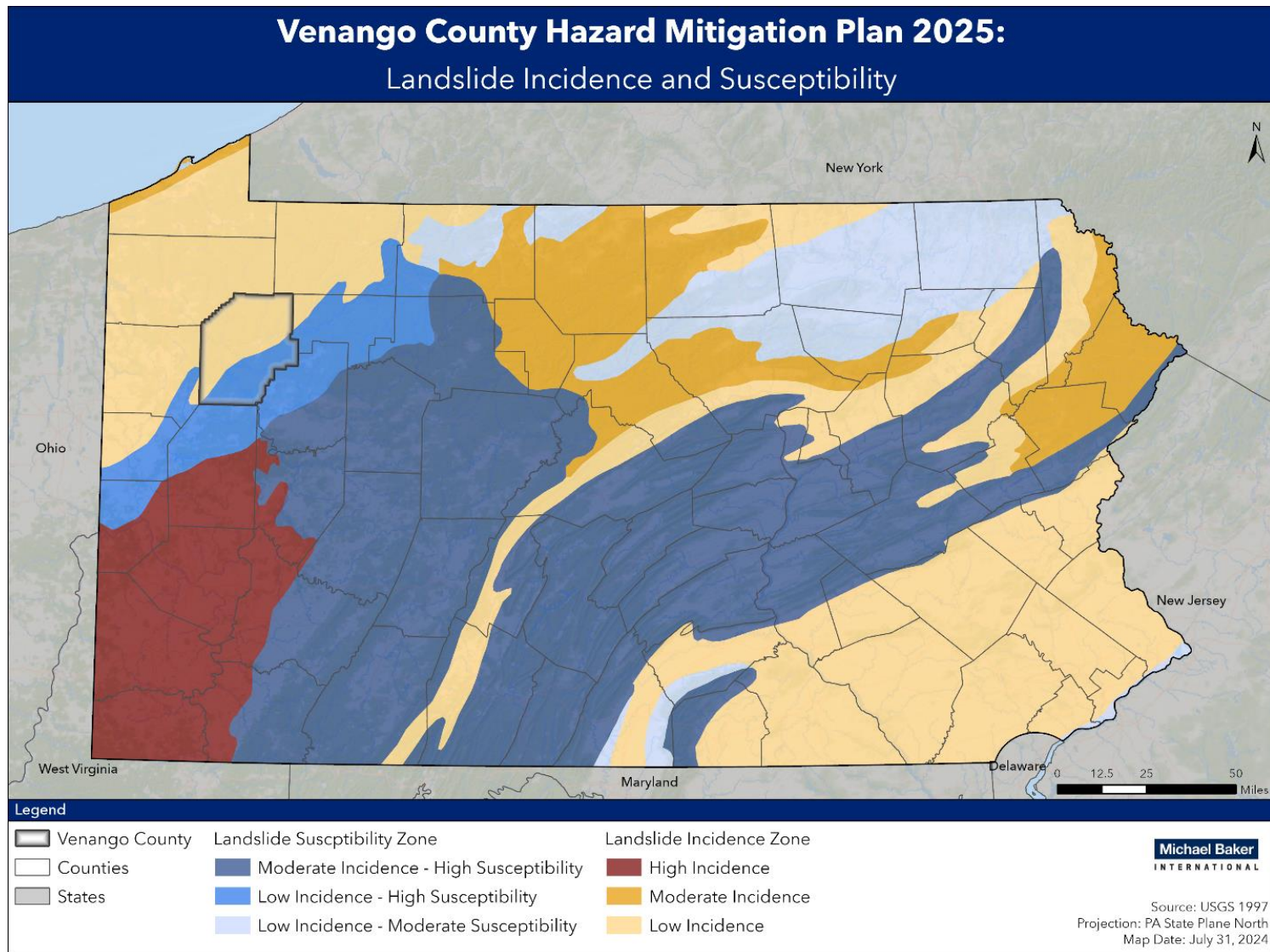
Many slope failures are associated with precipitation events – periods of sustained above-average precipitation, specific rainstorms, or snowmelt events. Areas experiencing erosion, decline in vegetation cover, and earthquakes are also susceptible to landslides. Human activities that contribute to slope failure include altering the natural slope gradient, increasing soil water content, and removing vegetation cover (DCNR, 2001). The geologic instabilities that cause landslides to occur are often exacerbated by highway projects in which the earth is cut, and soil is loosened.

Although landslides may occur anywhere in Pennsylvania, only 15 to 18 percent of the Commonwealth's land area is naturally prone to landslides. Areas that are generally prone to landslide hazards include previous landslide areas, the bases of steep slopes, the bases of drainage channels, developed hillsides, and areas recently burned by forest and brush fires (Delano & Wilshusen, 2001). Urban and rural land development increases both the number of landslides and the economic effects of natural slides. Major highway construction with large excavations and fills located in mountainous areas creates potential for many landslides (PA DCNR, 2000). In other words, human activity can cause instability in an otherwise stable slope because of the presence of underlying weak red beds. In general, though, slopes with a gradient of 15% or higher may be prone to slide, especially in conjunction with heavy rain events.

According to DCNR, southwestern Pennsylvania has by far the highest concentration of landslides, even though much of the state has susceptible areas. Most major and minor highways have sections cut in rock or soil that can fail. Outside the southwest, such as Venango County, high susceptibility areas are smaller and have more varied geology and topography. This can be confirmed from the map below that illustrates the relative landslide hazard susceptibility across the Commonwealth of Pennsylvania. According to figure 4.3.4-1 Venango County has "low incidence" in the northwestern half of the County and "high susceptibility" in the southern part of the County. Due to the geology and topography of the area, the southern portion of the County is more susceptible to landslides, specifically Richland, Rockland, Scrubgrass, Pine Grove, Clinton, and

Cranberry Townships and Emlenton Borough. However, landslides are not a serious risk in a majority of Venango County. If they occur, they are more likely to occur in the hill and valley areas of Venango County. Limited areas of steep slopes associated with the banks of major watercourses in the County could collapse under heavy rainfall to produce a localized landslide. The potential of damage to lives or property from this type of natural hazard is low.

Figure 4.3.1: Venango County Landslide Incidence and Susceptibility



4.3.4.2. Range of Magnitude

Landslides can have potentially devastating consequences in localized areas. Landslides cause damage to transportation routes, utilities, and buildings and create travel delays and other side effects. Structures or infrastructure built on susceptible land will likely collapse as their footings slide downhill. Structures below the landslide can be crushed. Landslides next to roads and highways have the potential to fall on and damage vehicles or cause accidents.

According to the DCNR website, deaths and injuries due to landslides are rare in Pennsylvania. Most Pennsylvania landslides are moderate to slow moving and damage property rather than people. Almost all of the known deaths due to landslides have occurred when rock falls or other slides along highways involved vehicles. If residential and recreational development increases on and near steep mountain slopes, the hazard from these rapid events will also increase. Storm-induced debris flows are the only other type of landslide likely to cause death and injuries in Venango County. Property losses due to landslides and associated effects are more common than injuries and deaths.

Most damages are less expensive, but significant. "Backyard" landslides are usually repaired incompletely or not at all. Cost estimates of several hundred thousand dollars for stabilization and repair of a landslide affecting two or three properties are typical. With repair estimates exceeding the value of the properties, abandonment is a frequent "solution". Sometimes local governments assist with relocation costs or "buy out" homeowners. Insurance covers landslide damage only for some business situations (PA DCNR 2010).

The impact of landslides on the environment depends on the size and specific location of the event. In general, impacts include:

- Changes to topography
- Damage or destruction of vegetation
- Potential diversion or blockage of water in the vicinity of streams, rivers, etc....
- Increased sediment runoff both during and after event

The following community lifelines are affected by landslides:

Figure 4.3.4.2-1: Most Likely Lifelines Impacted by Landslide	
LIFELINES	NOTES
	Government officials will be called into action in response. Monitoring landslide risks, mapping vulnerable areas, and awareness outreach to help people become more aware of erosion risks.

Figure 4.3.4.2-1: Most Likely Lifelines Impacted by Landslide

LIFELINES	NOTES
	Promoting site and building residing standards to minimize risk and even removing existing buildings from hazard areas.
	Response and recovery due to potential damage to transportation infrastructure.

4.3.4.3. Past Occurrence

According to the Pennsylvania Department of Conservation and Natural Resources (DCNR), no one really knows how many landslides occur each year in Pennsylvania or how much damage they cause, although there have been a few efforts to determine totals. Landslides are not the type of hazard that receives a disaster declaration since they affect only localized sites.

A comprehensive inventory of landslide events in Pennsylvania does not exist. The NCDC database captures landslides as they occur in conjunction with severe storms; the NCDC database does not report any landslides in Venango County. Landslides with minor impact are defined as landslides impacting five or less developed properties or causing \$1,000,000 or less damage. Minor landslides typically are incidents that have been in remote locations causing little to no damage.

Since landslides often occur during periods of heavy rain or snowmelt, it is possible to examine past occurrences of these events. At least 61 heavy snow events have been recorded by NCEI since 1996, which are shown in Table 4.3.6-2.

Table 4.3.4.3-1: Heavy Rain and Heavy Snow Events in Venango County (NOAA NCEI, 2024)

Date	Type	Date	Type
1/2/1996	Heavy Snow	12/15/2007	Heavy Snow
3/7/1996	Heavy Snow	1/1/2008	Heavy Snow
1/16/1997	Heavy Snow	11/20/2008	Heavy Snow
1/27/1997	Heavy Snow	1/9/2009	Heavy Snow
12/17/1998	Heavy Snow	1/17/2009	Heavy Snow
3/6/1999	Heavy Snow	2/5/2010	Heavy Snow
11/22/2000	Heavy Snow	12/5/2010	Heavy Snow

Table 4.3.4.3-1: Heavy Rain and Heavy Snow Events in Venango County (NOAA NCEI, 2024)

Date	Type	Date	Type
12/25/2002	Heavy Snow	1/31/2011	Heavy Snow
12/6/2003	Heavy Snow	2/1/2011	Heavy Snow
12/20/2003	Heavy Snow	2/20/2011	Heavy Snow
1/14/2004	Heavy Snow	2/25/2011	Heavy Snow
1/28/2004	Heavy Snow	3/10/2011	Heavy Snow
3/16/2004	Heavy Snow	1/2/2012	Heavy Snow
12/14/2004	Heavy Snow	12/26/2012	Heavy Snow
1/22/2005	Heavy Snow	8/28/2013	Heavy Rain
3/1/2005	Heavy Snow	8/28/2013	Heavy Rain
4/3/2005	Heavy Snow	11/23/2013	Heavy Snow
2/13/2007	Heavy Snow	11/26/2013	Heavy Snow
3/16/2007	Heavy Snow	2/15/2016	Heavy Snow
12/15/2007	Heavy Snow	9/7/2018	Heavy Rain

4.3.4.4. Future Occurrence

Since the exact number of previous landslides over a definite time interval is not known, it is not possible to determine a quantitative probability of future occurrence for landslides in Venango County. Given that damages have been reported from a landslide in Venango County, the future occurrence of landslides can be considered possible as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

Changing weather patterns have resulted in increased precipitation in the region. Frequent and intense rainfall is leading to severe flooding and can trigger flash floods and river overflow. Saturated soils create prime conditions for landslides and mudflows. As intense rainfall continues to increase in Venango County, it is possible that there will be an increase in landslide occurrence during and after rain events in the southeast region of the county. Utilizing the Risk Factor Methodology, the probability for a landslide event to occur is possible (see Table 4.4-1).

4.3.4.5. Vulnerability Assessment

A landslide vulnerability assessment involves determining the location of susceptible lands and then determining what community assets are located on those susceptible

lands. The following steps are typically followed to determine the spatial extent of landslide hazard (FEMA):

- Identify existing or old landslides:
 - On or at the base of slopes;
 - In or at the base of minor drainage hollows;
 - At the base or top of an old fill slope;
 - At the base or top of a steep cut slope; or
 - Developed hillsides where leach field septic systems are used.
- Map the topography since steeper slopes have greater probability of landslides.
- Map the geology, because in addition to the slope angle, the presence of rock or soil that weakens when saturated, as well as poorly drained rock or soil are indicators of slope instability as well.
- Contact local and state geological survey, other persons who might be knowledgeable about the local conditions in relation to landslides.

Conditions that may exacerbate or mitigate the severity and effects of landslides include erosion, unstable slopes, earthquakes, increase of weight of slopes, hydrologic factors and human activity. Human activities are responsible for initiating or intensifying certain conditions where otherwise there would have been little or no risk. Activities that increase vulnerability by triggering landslides include:

- Excavations and development in unstable slope materials.
- Haphazard construction or improper use of pipelines.
- Disruption of surface or subsurface drainage (streams and springs) e.g. by filling.
- Overuse of fill materials on slopes, particularly at the heads of existing slide masses.
- Removal of materials at the bases of slopes.
- Vibrations from heavy traffic, blasting, and driving piles near unstable slopes.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could potentially reduce landslide risk in high-risk areas, leading to less disturbances of unstable slopes and lower overall exposure to landslide hazards.

Table 4.3.4.5-1 shows the Critical Facilities and Community Lifelines that are vulnerable to landslide in Venango County. These facilities are also noted in [Appendix E](#).

Table 4.3.4.5-1: Critical Facilities and Community Lifelines That Are Vulnerable to Landslide

Name	Address	Municipality	Zip Code	Type
EAKIN	687 BUCKTAIL RD	Cranberry		Airports
GREENVILLE MOUNTAIN	749 MOUNTAIN RD.	Cranberry		Airports
UPMC NORTHWEST	200 LOTHROP ST	Cranberry		Airports
NEW CINGULAR WIRELESS PCS, LLC	3880 STATE ROUTE 308	Clinton		Cell Towers
NEW CINGULAR WIRELESS PCS, LLC	535 GIBB ROAD	Irwin		Cell Towers
NEW CINGULAR WIRELESS PCS, LLC	717 HELPER ROAD	Rockland		Cell Towers
NEW CINGULAR WIRELESS PCS, LLC	1030 EAKIN RD	Scrubgrass		Cell Towers
PENNSYLVANIA RSA 1 LIMITED PARTNERSHIP	1418 CLINTONVILLE RD	Barkeyville		Cell Towers
PENNSYLVANIA RSA 1 LIMITED PARTNERSHIP	1.5 MILES E OF I/S RT. 8 & RT. 308	Clinton		Cell Towers
PENNSYLVANIA RSA 1 LIMITED PARTNERSHIP	OLD RT 208 BOX 11	Scrubgrass		Cell Towers
COMMUNITY CHRISTIAN DAY CARE	511 HILL STREET	Emlenton	16373	Day Care Centers
CRANBERRY CHILD DVPT CTR	180 SALINA RD	Cranberry	16346	Day Care Centers
CLINTONVILLE VOLUNTEER FIRE AND RELIEF ASSOCIATION	501 EMLENTON STREET	Clintonville	16372	Fire Stations
EMLENTON FIRE DEPARTMENT STATION 55	410 MAIN STREET	Emlenton	16373	Fire Stations
PINEGROVE TOWNSHIP VOLUNTEER FIRE DEPARTMENT	2369 STATE HIGHWAY 157	Pinegrove	16301	Fire Stations

Table 4.3.4.5-1: Critical Facilities and Community Lifelines That Are Vulnerable to Landslide

Name	Address	Municipality	Zip Code	Type
ROCKLAND TOWNSHIP VOLUNTEER FIRE DEPARTMENT	995 PITTSVILLE ROAD	Rockland	16374	Fire Stations
UPMC NORTHWEST - SENECA	100 FAIRFIELD DRIVE	Cranberry	16346	Hospitals / Ambulance / EMS Stations
Barkeyville Borough Building	5404 Pittsburgh Road	Barkeyville	16038	Municipal Buildings
Clinton Township Building	123 Donaldson Road	Clinton	16374	Municipal Buildings
Clintonville Borough Building	109 Franklin Street	Clintonville	16372	Municipal Buildings
Emlenton Borough Building	511 Hill Street	Emlenton	16373	Municipal Buildings
Pinegrove Township Building	2758 State Route 157	Pinegrove	16364	Municipal Buildings
Richland Township Building	1740 Richland-Nickelville Road	Richland	16373	Municipal Buildings
Rockland Township Building	1115 Rockland Township Road	Rockland	16374	Municipal Buildings
Scrubgrass Township Building	173 McNany Road	Scrubgrass	16373	Municipal Buildings
Sugarcreek Borough Building	212 Fox Street	Sugarcreek	16373	Municipal Buildings
UPMC NORTHWEST TRANSITIONAL CARE UNIT	100 FAIRFIELD DRIVE	Cranberry	16346	Nursing Homes
City of Franklin Police Department	430 13th Street #B2	Franklin	16323	Police Stations
Emlenton Police Department	511 Hill Street	Emlenton	16373	Police Stations
Oil City Police Department	21 Seneca Street	Oil City	16301	Police Stations

Table 4.3.4.5-1: Critical Facilities and Community Lifelines That Are Vulnerable to Landslide

Name	Address	Municipality	Zip Code	Type
Pennsylvania State Police - Franklin Barracks	6724 US 322	Cranberry	16323	Police Stations
CHRISTIAN LIFE ACADEMY	224 S MAIN ST	Cranberry	16346	Schools
COAL VALLEY SCHOOL	253 BAILEY RD	Clinton	16373	Schools
CRANBERRY AREA JSHS	1 EDUCATION DR	Cranberry	16346	Schools
CRANBERRY EL SCH	3 EDUCATION DR	Cranberry	16346	Schools
FAITH CHRISTIAN ACADEMY	235 HORSECREEK RD	Cranberry	16346	Schools
MEADOW VIEW SCHOOL	775 FARREN SURRENA RD	Irwin	16038	Schools
PINEGROVE EL SCH	278 PINEGROVE SCHOOL RD	Pinegrove	16364	Schools
VICTORY EL SCH	1819 GEORGETOWN RD	Irwin	16038	Schools

Landslide vulnerability is highly site-specific, but this HMP provides an estimate of structures or critical facilities that may be vulnerable to landslides by being located on slopes of 15% or steeper. Table 4.3.4.5-2 shows vulnerable structures by type. The structures in landslide high-susceptibility areas within Venango County. Communities of note include Clintonville Borough, Emlenton Borough, Pinegrove Township, Richland Township, and Scrubgrass Township whose structures noted below are all within high-susceptible areas. Clinton Township, Cranberry Township, and Rockland Township, and Irwin Township also have more than or almost of their structures within high-susceptible areas. Overall, structures within these areas are residential followed by agricultural and commercial.

Table 4.3.4.5-2: Structures in Landslide High-Susceptible Areas Within Venango County

Municipality	Total Structures	Agriculture	Commercial	Industrial	Residential	Utility	Vacant	Unknown	Total
Allegheny Township	225								
Barkeyville Borough	159	5	8		45		1		59
Canal Township	522								
Cherrytree Township	836								
Clinton Township	563	213	23	4	288		28		556
Clintonville Borough	244	9	83	1	133	3	15		244
Cooperstown Borough	215								
Cornplanter Township	1,316								
Cranberry Township	3,487	305	328	10	871	1	38	1	1,554
Emlenton Borough	379		63		294	4	17	1	379
Franklin, City of	2,988								
Frenchcreek Township	899								
Irwin Township	727	133	10		176		23	2	344
Jackson Township	570								
Mineral Township	330				1				1
Oakland Township	747								
Oil City, City of	4,757								
Oil Creek Township	496								
Pinegrove Township	698	257	32	1	380		27	1	698
Pleasantville Borough	471								
Plum Township	552								
Polk Borough	260								
President Township	775	6			3		20		29
Richland Township	602	163	137	2	214	1	83	2	602
Rockland Township	1,465	262	41	1	1,031	2	110		1,447
Rouseville Borough	253								
Sandycreek Township	1,235	22	2		127	1	9		161

Table 4.3.4.5-2: Structures in Landslide High-Susceptible Areas Within Venango County

Municipality	Total Structures	Agriculture	Commercial	Industrial	Residential	Utility	Vacant	Unknown	Total
Scrubgrass Township	733	201	21	7	466		35	3	733
Sugarcreek Borough	2,516								
Utica Borough	126								
Victory Township	338	4	3		17		1		25
Total	29,484	1,580	751	26	4,046	12	407	10	6,832

4.3.4.6. Equity in Vulnerable Communities

Equity considerations include those who live in manufactured homes as they are highly susceptible to any ground disturbances. Low-income communities may have weaker infrastructure, such as poorly maintained roads and inadequate drainage systems which exacerbate landslide risks, will also be at a higher risk. In terms of immediate safety risks, vulnerable populations, such as the elderly, people with disabilities, or those without access to emergency shelters, may face greater risks. Some of these communities that not only are older in age but have a lower median household include Rouseville Borough, Clintonville Borough, and Richland Township.

4.3.5. Pandemic and Infectious Disease

4.3.5.1. Location and Extent

Pandemic is defined as a disease affecting or attacking the population of an extensive region, including several countries, and/or continent(s). It is further described as extensively epidemic. Generally, pandemic diseases cause sudden, pervasive illness in all age groups on a global scale. Infectious diseases are also highly virulent but are not spread person-to-person.



Pandemic and infectious disease events cover a wide geographical area and can affect large populations, potentially including the entire population of the County. The exact size and extent of an infected population is dependent upon how easily the illness is spread, the mode of transmission and the amount of contact between infected and uninfected individuals. The transmission rates of pandemic illnesses are often higher in denser areas where there are large concentrations of people. The transmission rate of infectious disease will depend on the mode of transmission of a given illness. Pandemic events can also occur after other natural disasters, particularly floods, when there is the potential for bacteria to grow and contaminate water.

Venango County is primarily concerned with the possibility of a pandemic flu outbreak. Influenza, also known as “the flu”, is a contagious disease that is caused by the influenza virus and most commonly attacks the respiratory tract in humans. Influenza is considered to have pandemic potential if it is novel, meaning that people have no immunity to it, virulent, meaning that it causes deaths in normally healthy individuals, and easily transmittable from person-to-person (CDC, 2024).

Different strands of influenza mutate over time and replace older stands of the virus and thus have drastically different effects. The H1N1 virus, colloquially known as swine flu, is of particular concern. This virus was first detected in people in the United States in April 2009. On June 11, 2009, the World Health Organization signaled that a pandemic of 2009 H1N1 flu was underway (CDC, 2009a). Avian influenza, also known as bird flu, infects birds. A recent strain, H5N1, has caused particular concern due to its ability to pass from wild birds to poultry then on to people. This virus has killed more than half of the people infected with it, although the avian flu is less likely to infect humans (Mayo Clinic, 2024).

At the time of the last HMP update, a novel coronavirus spread into a worldwide pandemic. Named COVID-19, this type of coronavirus is a new virus that causes respiratory illness and is extremely contagious. Flu-like in nature, symptoms of the virus include fever, cough, shortness of breath, and diarrhea. This virus became a great

concern due to its high rates of transmission, in addition to so little being known about it. People were advised to practice social distancing; only leaving the house for essentials like grocery shopping, and no gathering even in small groups. Even when going on walks, people should remain six feet apart to slow the spread of transmission.

4.3.5.2. Range of Magnitude

The magnitude of a pandemic or infectious disease threat in Venango County will range significantly depending on the aggressiveness of the virus in question and the ease of transmission. Pandemic influenza is easily transmitted from person-to-person, but advances in medical technologies have greatly reduced the number of deaths caused by influenza over time. The magnitude of a pandemic may be exacerbated by the fact that an influenza pandemic will cause outbreaks across the United States, limiting the ability to transfer assistance from one jurisdiction to another. Additionally, effective preventative and therapeutic measures, including vaccines and other medications, will likely be in short supply or will not be available.

In terms of lives lost, the impact various pandemic influenza outbreaks have had globally over the last century has declined (see Table 4.3.9-2). The severity of illness from the 2009 H1N1 influenza flu virus varied, with the gravest cases occurring mainly among those considered at high risk. High-risk populations considered more vulnerable include children, the elderly, pregnant women, and chronic disease patients with reduced immune system capacity. These populations are described in more detail in [Section 4.3.9.5](#). Most people infected with swine flu in 2009 recovered without needing medical treatment (CDC, 2009b). Unlike a regular flu season, according to the Centers for Disease Control (CDC) most of the people who died, as many as 77 percent were 18 to 64 years old with up to 11 percent of the deaths estimated in those 17 years old and younger.

The 1918 Spanish flu pandemic was the worst-case pandemic event in the 20th century for both Pennsylvania and worldwide. County data is unavailable, and mortality figures were probably under-reported, it is recorded that 8,000 Pennsylvanians died from the flu or its complications in the first month alone (US DHHS, 2009). Infection rates were much worse in denser cities, which should be a high priority for response actions in future flu events.

Venango County has faced varying impacts of the COVID-19 pandemic. It is believed that the virus originated in an open-air market in the Wuhan province of China in November 2019. Shortly afterwards, the virus began to spread to nearby countries like Japan and South Korea. By March 2020, the virus had reached almost every country worldwide, with the most cases in the United States. At first, concern was focused on people who might be infected due to recent travel. However, community infections soon began to crop up in many cities and towns. This led to a statewide shutdown of schools and businesses and the cancellation of large events for Spring and Summer

2020. Only life sustaining services were permitted to remain open, including medical facilities, pharmacies, and grocery stores. People were advised to remain home as much as possible in attempt to slow the transmission of COVID-19. State health officials note that the virus has infected all age ranges at about the same rate, and that no age group can be considered more or less vulnerable to infection (CDC, 2024c).

At the end of 2020, the first COVID-19 vaccine for emergency use was authorized by the EPA and by March 2021 more than 100 million COVID-19 vaccine doses had been administered. (CDC, 2024c) While the Federal Public Health Emergency for COVID-19 expired on May 11th, 2023, new variants have begun to pop up and case levels remain significant nationwide (US DHHS,2024).

The potential impacts of pandemic and infectious diseases:

Table 4.3.5.2-1: Most Likely Lifelines Impacted by Pandemic and Infectious Diseases	
LIFELINES	NOTES
	Government services and administration will be significantly impacted by widespread disease. Response plans will need to be developed.
	Staffing issues may occur due to illness at various points in the food supply chain.
	Hospitals will be impacted through staffing issues, an increase in patients, and supply chain issues as the disease becomes more widespread.

4.3.5.3. Past Occurrence

The United States Department of Health and Human Services estimates that influenza pandemics have occurred for at least 300 years at unpredictable intervals. There have been several pandemic influenza outbreaks over the past 100 years. A list of events and worldwide deaths are shown in Table 4.3.9-3.

Table 4.3.5.3-1: Significant Influenza Outbreaks over the Past Century (Global Security, 2009; WHO, 2009)		
DATE	PANDEMIC	WORLDWIDE DEATHS (APPROXIMATE)
1918-1920	Spanish Flu/H1N1	50 million
1957-1958	Asian Flu/H2N2	1.5-2 million
1968-1969	Hong Kong Flu/H3N2	1 million
2009-2010	Swine Flu/H1N1	284,000

Deaths occurred in the United States as a result of the Spanish Flu, Asian flu, and Hong Kong Flu outbreaks. The Spanish Flu claimed 500,000 lives in the United States, and there were 350,000 cases in Pennsylvania – 150,000 were in Philadelphia alone. Most deaths resulting from the Asian flu occurred between September 1957 and March 1958; there were about 70,000 deaths in the United States and approximately 15% of the population of Pennsylvania was affected. The first cases of the Hong Kong Flu in the U.S. were detected in September of 1968 with deaths peaking between December 1968 and January 1969 (Global Security, 2009). In the 2009/2010 flu season, when H1N1 was a primary concern. The World Health Organization declared a pandemic in June 2009.

Table 4.3.5.3-2 describes the Venango County Seasonal Influenza cases by type from 2018 to 2023. The 2020 – 2021 flu season data was not available because influenza activity was abnormally low due to the COVID-19 pandemic mitigation measures. The flu cases have been increasingly rising from 2021 to now with over a 350 jump in cases from the 2021/22 flu season to the 2022/23 flu season.

Table 4.3.5.3-2: Venango County Seasonal Influenza Data 2018-2023				
	Influenza Type			Total
Venango County	A	B	U	
2022/23	488	10	0	498
2021/22	126	19	0	145
2020/21	2020/21 influenza season data is not available because influenza activity was abnormally low likely due to COVID-19 mitigation measures.			
2018/2019	225	1	0	226
Total	839	30	0	869

The COVID-19 outbreak began in China in November 2019. The virus reached the US in late February 2020, and most counties in Pennsylvania were affected by March 2020. As of August, 2020, there were 74 confirmed cases of COVID 19 / SARS-CoV-2 in Venango County as shown in Table 4.3.5-3. One of these cases resulted in death. The counties adjacent to Venango have been similarly affected by the coronavirus pandemic. Butler and Mercer counties have seen higher case counts than any other surrounding counties. (Pennsylvania Department of Health, 2009). Businesses and restaurants are slowly reopening with reduced capacity and social distancing restrictions in place. While those who tested positive are isolating in their homes, county officials urge the entire population to isolate and act as if the virus is everywhere.

Table 4.3.5.3-3: Cumulative COVID-19 Cases and Total Deaths in Venango County 2020-2023 (PA DOH, 2020b) (PA Open Data, 2024)

Date	COVID-19 Cases	COVID -19 Deaths
1/22/2020	0	0
3/29/2020	1	0
7/23/2020	53	0
10/25/2020	214	1
1/22/2021	2963	68
3/29/2021	3510	90
7/22/2021	4119	102
10/25/2021	6269	132
1/22/2022	10290	213
3/29/2022	11230	236
7/23/2022	12029	249
10/25/2022	13079	257
1/22/2023	13612	266
3/29/2023	13963	274
7/23/2023	14063	280

4.3.5.4. Future Occurrence

Future occurrences of pandemics and infectious diseases are unclear. The precise timing of pandemic influenza is uncertain, but occurrences are most likely when the Influenza Type A virus makes a dramatic change, or antigenic shift, that results in a new or “novel” virus to which the population has no immunity. This emergence of a novel virus is the first step toward a pandemic. Future pandemics may also emerge from other diseases, especially invasive pathogens that Pennsylvanians do not have natural immunity to. While it is unlikely that pandemics and infectious diseases will affect the county, this hazard occurred recently in Spring 2020. It is impossible to predict this type of hazard. The best form of county response is to expect that these events can occur at any time and to constantly evaluate resources and update emergency response plans.

Looking at the number of historical incidences of pandemic-potential diseases, the probability of future pandemic events can be considered *possible* according to the Risk Factor Methodology (see Table 4.4-1).

4.3.5.5. Vulnerability Assessment

Schools and major universities are particularly vulnerable to the spread of disease due to the presence of large population groups in relatively close confinement. During the COVID-19 pandemic, Franklin Area School District adopted a hybrid learning model to reduce classroom density and facilitate social distancing. Additionally, the Venango Technology Center developed a comprehensive Health and Safety Plan, outlining protocols such as enhanced sanitation, health monitoring, and adjustments to classroom layouts to ensure compliance with public health guidelines. These steps were taken to adapt to the challenges and vulnerabilities posed by pandemic and infectious environments.

Certain population groups are at higher risk of pandemic flu infection. This population group includes people 65 years and older, children younger than five years old, pregnant women, and people of any age with certain chronic medical conditions. Such conditions include but are not limited to diabetes, heart disease, asthma and kidney disease (CDC, 2024b). Schools, colleges, convalescent centers, and other institutions serving those younger than five years old and older than 65 years old, are locations conducive to faster transmission of pandemic influenza since populations identified as being at high risk are concentrated at these facilities or because of a large number of people living in close quarters.

Across Venango County, critical facilities such as nursing homes, schools, daycare centers, hospitals, and mental health providers are unevenly distributed, with urban municipalities like Oil City, Franklin City, and Cranberry Township hosting the majority of these resources (shown in table 4.3.5.5-1). These municipalities are better equipped to support vulnerable populations during a pandemic, including the elderly, disabled, and uninsured. In contrast, many rural municipalities lack essential healthcare and support infrastructure, increasing their reliance on regional coordination and mobile services during public health emergencies.

Jurisdictional vulnerability varies significantly across the county. Municipalities with higher percentages of elderly and disabled residents—such as Cornplanter Township, Polk Borough, and Sandycreek Township, face elevated risks during pandemics. However, the absence of hospitals and limited access to mental health services in most rural areas further compounds these risks. This disparity highlights the need for targeted mitigation strategies and resource allocation to ensure equitable protection and response capabilities across all communities.

Table 4.3.5.5-1 Critical Facilities That Support Vulnerable Populations by Municipality

Municipality	Day Care Centers	Fire Stations	Hospitals/ Ambulance e/EMS	Nursing Homes	Schools	Total
Allegheny Township	0	0	0	0	0	0
Barkeyville Borough	0	0	0	0	0	0
Canal Township	0	1	0	0	0	1
Cherrytree Township	1	1	0	1	0	3
Clinton Township	0	0	0	0	1	1
Clintonville Borough	0	1	0	0	0	1
Cooperstown Borough	0	1	0	0	0	1
Cornplanter Township	1	1	0	1	1	4
Cranberry Township	1	1	2	0	4	8
Emlenton Borough	1	1	0	0	0	2
Franklin City, City of	4	2	1	4	2	13
Frenchcreek Township	0	0	0	0	0	0
Irwin Township	0	0	0	0	2	2
Jackson Township	0	0	0	0	0	0
Mineral Township	0	0	0	0	0	0
Oakland Township	0	0	0	0	0	0
Oil City, City of	4	2	1	1	8	16
Oil Creek Township	0	0	0	0	0	0
Pinegrove Township	0	1	0	0	1	2
Pleasantville Borough	0	1	0	0	1	2
Plum Township	0	0	0	0	0	0
Polk Borough	0	1	0	3	0	4
President Township	0	1	0	0	0	1
Richland Township	0	0	0	0	0	0
Rockland Township	0	1	0	0	0	1
Rouseville Borough	0	0	0	0	0	0
Sandycreek Township	0	1	0	0	3	4
Scrubgrass Township	0	0	0	0	0	0
Sugarcreek Borough	1	2	2	1	2	8
Utica Borough	0	1	0	0	1	2
Victory Township	0	0	0	0	0	0
Total	13	20	6	11	26	75

There are no true environmental impacts of pandemics and infectious disease threats, but there will be significant economic and social costs beyond the possibility of disease-related deaths. Widespread illness may increase the likelihood of shortages of personnel to perform essential community services. In addition, high rates of illness and worker absenteeism occur within the business community, and these contribute to social and economic disruption. Social and economic disruptions could be temporary but may be amplified in today's closely interrelated and interdependent systems of trade and commerce. Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications.

The environmental sector found that several studies showed the global socio-economic disruptions from the COVID-19 pandemic have directly and indirectly impacted community's abilities to implement projects that can improve environmental conditions such as air and water quality, reduction of noise, and restoration of ecology (Rume & Didar-UI Islam, 2020). Pandemics and other infectious disease events impact people's health and the ability of both private and public entities to administer services and maintain infrastructure. This hazard impacts the Safety and Security lifeline tremendously, with significant risk to the community and potential restrictions on government services due to staffing shortages and potential public health regulations. (PA HMP, 2023).

Jurisdictional losses in a pandemic or infectious disease outbreak stem from lost wages and productivity, not losses to buildings or land. Losses are difficult to estimate because the exact rates of absenteeism and cost of treating a widespread disease will depend on the virus or bacterium in question, the availability of vaccination or treatment, and the severity of symptoms. For historical context, though, the Asian and Hong Kong Flu pandemics killed over 1.5 million people worldwide and caused an estimated \$32 billion loss due to lost productivity and medical expenses (Saunders-Hastings & Krewski, 2016). With Pennsylvania's economy so integral to the national economy, economic losses from a pandemic or infectious disease threat could be significant. An avian flu outbreak could cause some economic loss for poultry farmers in Venango County. According to the 2022 Agricultural Census, livestock sales make up about 33% Venango County's agricultural sales. Poultry and egg sales totaled around \$55,000 in 2022.

It is expected that there will be immense losses due to the COVID-19 pandemic. Thousands of individuals were laid off across the commonwealth as non-essential businesses were forced to close. In just one week, over three million Americans filed for unemployment; the greatest amount ever. There is specific concern for those who worked in service and hospitality industries. Construction projects and other businesses are in limbo, while many others decide to permanently close. However, the commonwealth and the federal government are releasing relief packages for

individuals and businesses. It is currently unknown how COVID-19 will change the economic environment.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could potentially reduce vulnerability to pandemic and infectious disease outbreaks by lowering population density, which can slow disease transmission and ease the burden of healthcare systems. However, it could also increase overall vulnerability if the shrinking population leads to fewer healthcare facilities, medical professionals, and resources, making it more difficult to respond to outbreaks.

4.3.5.6. Equity in Vulnerable Communities

Equity considerations during pandemics and infectious disease outbreaks are crucial as there are a number of populations at an increased risk. Low-income populations are more likely to lack access to quality healthcare and have pre-existing health conditions. Furthermore, these populations may be unable to follow quarantine measures as they are essential workers. Populations of people 65 and older are overall more susceptible to severe outcomes related to infectious disease, especially those currently residing within congregate care facilities. The HMP will address congregate care facilities with regard to risk identification, capability, and mitigation action with respect to COVID-19 impacts on residents. Households with inadequate broadband connection will have inequitable access to both remote work and remote learning. Having measures and protections in place for these groups is essential to mitigate and reduce the extensivity of this hazard.

4.3.6. Radon Exposure

4.3.6.1. Location and Extent

Radioactivity caused by airborne radon has been recognized for many years as an important component in the natural background radioactivity exposure of humans, but it was not until the 1980s that the wide geographic distribution of elevated values in houses and the possibility of extremely high radon values in houses were recognized. In 1984, routine monitoring of employees leaving the Limerick nuclear power plant near Reading, Pennsylvania, showed that the readings on Mr. Stanley Watras frequently exceeded expected radiation levels, yet only natural, non-fission-product radioactivity was detected on him. Radon levels in his home were detected around 2,500 pCi/L (pico Curies per Liter), much higher than the 4 pCi/L guideline of the Environmental Protection Agency or even the 67 pCi/L limit for uranium miners. As a result of this event, the Reading Prong section of Pennsylvania where Watras lived became the focus of the first large-scale radon scare in the world.



Radon is a gas that cannot be seen or smelled. It is a noble gas that originates by the natural radioactive decay of uranium and thorium. Like other noble gases (e.g., helium, neon, and argon), radon forms essentially no chemical compounds and tends to exist as a gas or as a dissolved atomic constituent in groundwater. Two isotopes of radon are significant in nature, ^{222}Rn and ^{220}Rn , formed in the radioactive decay series of ^{238}U and ^{232}Th , respectively. The isotope thoron (i.e. ^{220}Rn) has a half-life (time for decay of half of a given group of atoms) of 55 seconds, barely long enough for it to migrate from its source to the air inside a house and pose a health risk. However, radon (i.e. ^{222}Rn), which has a half-life of 3.8 days, is a widespread hazard. (DOI, 1992)

The distribution of radon is correlated with the distribution of radium (i.e. ^{226}Ra), its immediate radioactive parent, and with uranium, its original ancestor. Due to the short half-life of radon, the distance that radon atoms can travel from their parent before decay is generally limited to distances of feet or tens of feet. (DOI, 1992)

Three sources of radon in houses are now recognized (shown in Figure 4.3.8-1):

- Radon in soil air that flows into the house;
- Radon dissolved in water from private wells and exsolved during water usage; this is rarely a problem in Pennsylvania; and
- Radon emanating from uranium-rich building materials (e.g. concrete blocks or gypsum wallboard) ; this is not known to be a problem in Pennsylvania.

High radon levels were initially thought to be exacerbated in houses that are tightly sealed, but it is now recognized that rates of air flow into and out of houses, plus the location of air inflow and the radon content of air in the surrounding soil, are key factors in radon concentrations. Outflows of air from a house, caused by a furnace, fan, thermal “chimney” effect, or wind effects, require that air be drawn into the house to compensate. If the upper part of the house is tight enough to impede influx of outdoor air (radon concentration generally <0.1 pCi/L), then an appreciable fraction of the air may be drawn in from the soil or fractured bedrock through the foundation and slab beneath the house, or through cracks and openings for pipes, sumps, and similar features (see figure 4.3.8-1). Soil gas typically contains from a few hundred to a few thousand pCi/L of radon; therefore, even a small rate of soil gas inflow can lead to elevated radon concentrations in a house.

The radon concentration of soil gas depends upon a number of soil properties, the importance of which is still being evaluated. In general, ten to fifty percent of newly formed radon atoms escape the host mineral of their parent radium and gain access to the air-filled pore space. The radon content of soil gas clearly tends to be higher in soils containing higher levels of radium and uranium, especially if the radium occupies a site on or near the surface of a grain from which the radon can easily escape. The amount of pore space in the soil and its permeability for air flow, including cracks and channels, are important factors determining radon concentration in soil gas and its rate of flow into a house. Soil depth and moisture content, mineral host and form for radium, and other soil properties may also be important. For houses built on bedrock, fractured zones may supply air having radon concentrations similar to those in deep soil.

Each county in Pennsylvania is classified as having a low, moderate, or high radon hazard potential. Venango County is classified as having a high hazard, meaning there is a predicted indoor radon level greater than 4 pCi/L (see Figure 4.3.8-2).

Areas where houses have high levels of radon can be divided into three groups in terms of uranium content in rock and soil:

- Areas of very elevated uranium content (>50 ppm) around uranium deposits and prospects. Although very high levels of radon can occur in such areas, the hazard normally is restricted to within a few hundred feet of the deposit. In Pennsylvania, such localities occupy an insignificant area.
- Areas of common rocks having higher than average uranium content (5 to 50 ppm). In Pennsylvania, such rock types include granitic and felsic alkali igneous rocks and black shales. In the Reading Prong, high uranium values in rock or soil and high radon levels in houses are associated with Precambrian granitic gneisses commonly containing 10 to 20 ppm uranium, but locally containing more than 500 ppm uranium. In Pennsylvania, elevated uranium occurs in black shales of the Devonian Marcellus Formation and possibly the Ordovician

Martinsburg Formation. High radon values are locally present in areas underlain by these formations.

- Areas of soil or bedrock that have normal uranium content but properties that promote high radon levels in houses. This group is incompletely understood at present. Relatively high soil permeability can lead to high radon, the clearest example being houses built on glacial eskers. Limestone-dolomite soils also appear to be predisposed for high radon levels in houses, perhaps because of the deep clay-rich residuum in which radium is concentrated by weathering on iron oxide or clay surfaces, coupled with moderate porosity and permeability.

The second factor listed above is most likely the cause of radon levels in Venango County, although high test results may be a result of multiple factors. Figures 4.3.8-3, 4.3.8-4, 4.3.8-5, and 4.3.8-6 show the radon test data available for Venango County by zip code. As shown in Figure 4.3.8-3, most communities have average basement radon readings of over the threshold of action of 8.0 pCi/L, while many communities had maximum basement readings over 535 pCi/L (see Figure 4.3.6).

First floor average radon levels were substantially lower than average test results for basement, but many communities still exceeded the 4pCi/L threshold, which is shown in Figure 4.3.8-5. Additionally, maximum first floor radon levels were much lower than those for basements, but all exceeded the threshold of action. Communities with no data available did not have a sufficient sample size.

Figure 4.3.6.1-1: Radon Hazard Zones in PA, 2025

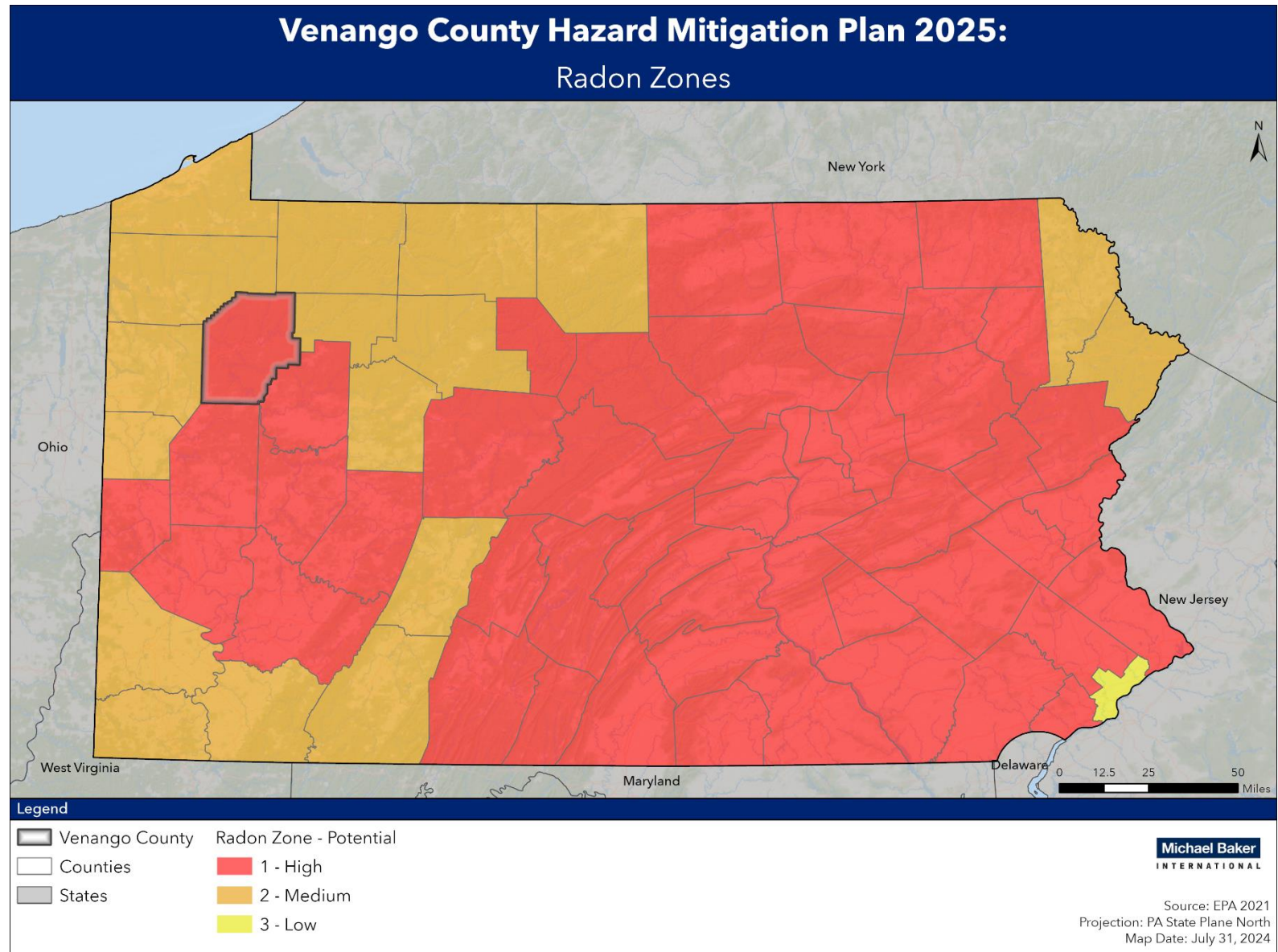


Figure 4.3.6.1-2: Venango County Average First Floor Radon Test Results

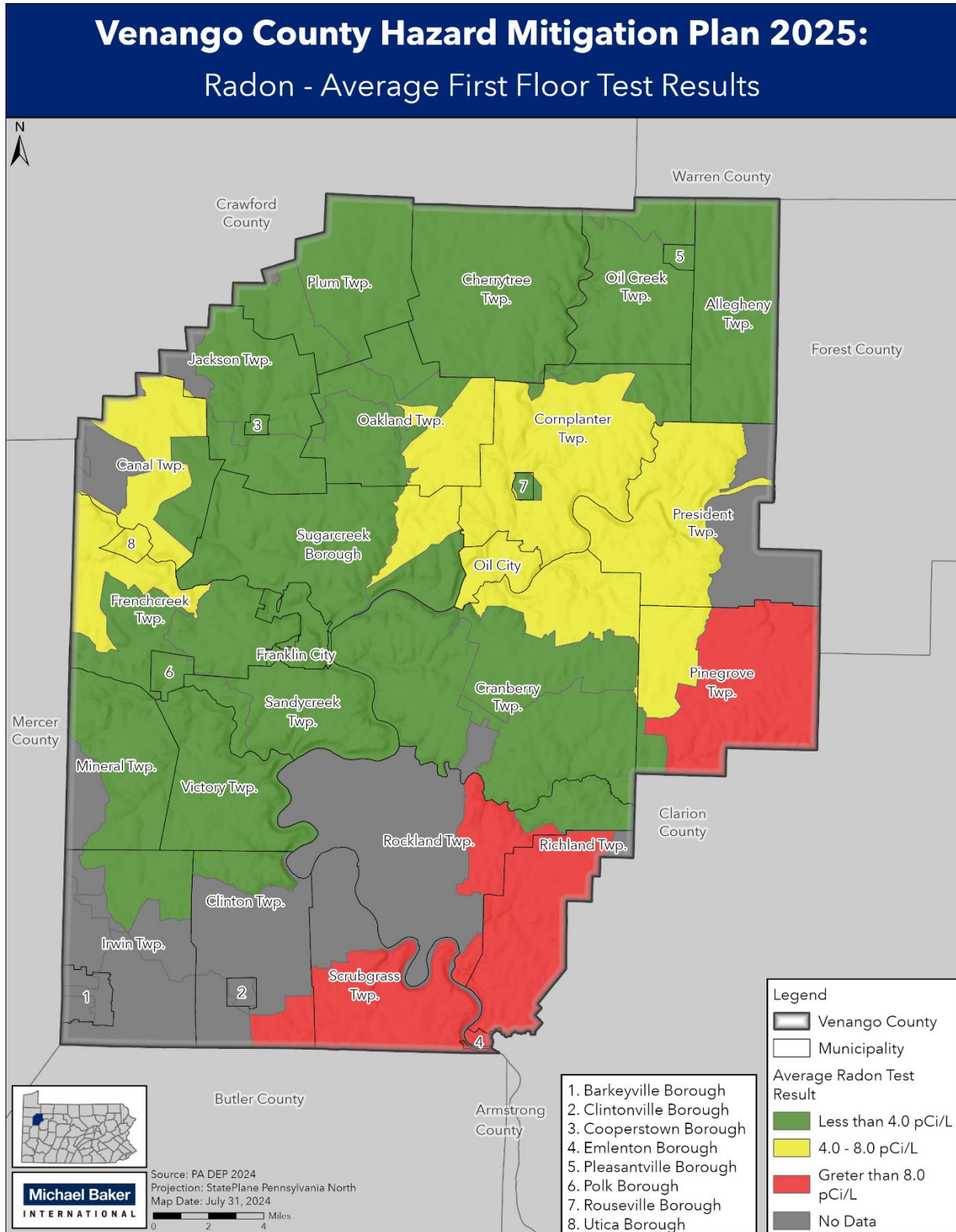
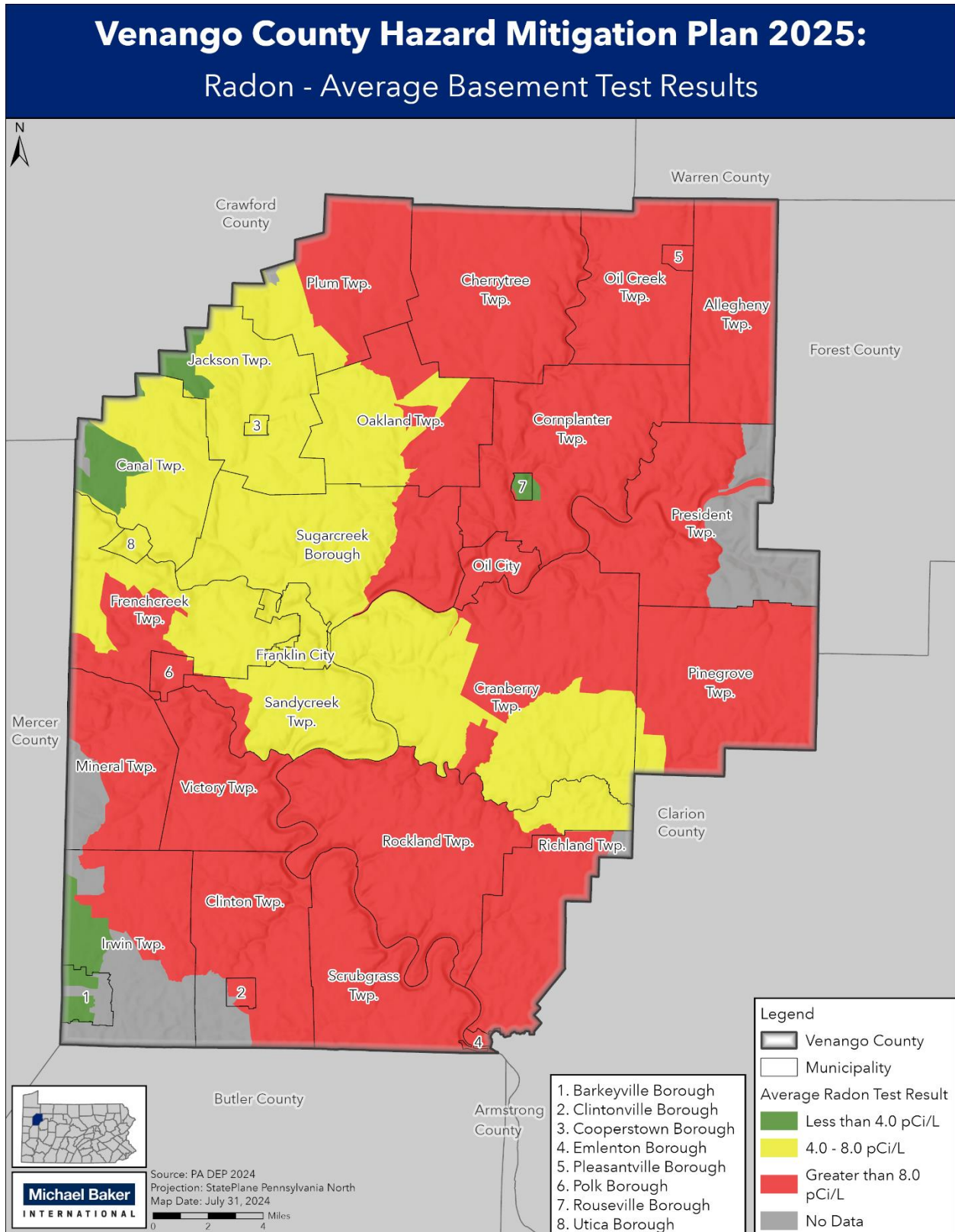


Figure 4.3.6.1-3: Venango County Average Basement Radon Test Results



4.3.6.2. Range of Magnitude

Exposure to radon is the second leading cause of lung cancer after smoking. It is the number one cause of lung cancer among non-smokers. Radon is responsible for about 21,000 lung cancer deaths every year; approximately 2,900 of which occur among people who have never smoked. Lung cancer is the only known effect on human health from exposure to radon in air and thus far, there is no evidence that children are at greater risk of lung cancer than are adults. The main hazard is actually from the radon daughter products (^{218}Po , ^{214}Pb , ^{214}Bi), which may become attached to lung tissue and induce lung cancer by their radioactive decay (US EPA, 2016).

According to the EPA, the average radon concentration in the indoor air of homes nationwide is about 1.3 pCi/L. The EPA recommends homes be fixed if the radon level is 4 pCi/L or more. However, because there is no known safe level of exposure to radon, the EPA also recommends that Americans consider fixing their home for radon levels between 2 pCi/L and 4 pCi/L (US EPA, 2016). Table 4.3.6.2-1 shows the relationship between various radon levels, probability of lung cancer, comparable risks from other hazards, and action thresholds. As is shown in Table 4.3.6.2-1, a smoker exposed to radon has a much higher risk of lung cancer.

Table 4.3.6.2-1: Radon Risk for Smokers and Non-Smokers (US EPA, 2016)

RADON LEVEL (cCi/L)	IF 1,000 PEOPLE WERE EXPOSED TO THIS LEVEL OVER A LIFETIME...*	RISK OF CANCER FROM RADON EXPOSURE COMPARES TO...**	ACTION THRESHOLD
Smokers			
20	About 260 people could get lung cancer	250 times the risk of drowning	Fix structure
10	About 150 people could get lung cancer	200 times the risk of dying in a home fire	
8	About 120 people could get lung cancer	30 times the risk of dying in a fall	
4	About 62 people could get lung cancer	5 times the risk of dying in a car crash	
2	About 32 people could get lung cancer	6 times the risk of dying from poison	Consider fixing structure between 2 and 4 pci/l
1.3	About 20 people could get lung cancer	(Average indoor radon level)	Reducing radon levels 2pci/l is difficult
0.4	About 3 people could get lung cancer	(Average outdoor radon level)	
Non-Smokers			
20	About 36 people could get lung cancer	35 times the risk of drowning	Fix structure
10	About 18 people could get lung cancer	20 times the risk of dying in a home fire	

Table 4.3.6.2-1: Radon Risk for Smokers and Non-Smokers (US EPA, 2016)

RADON LEVEL (pCi/L)	IF 1,000 PEOPLE WERE EXPOSED TO THIS LEVEL OVER A LIFETIME...*	RISK OF CANCER FROM RADON EXPOSURE COMPARES TO...**	ACTION THRESHOLD
8	About 15 people could get lung cancer	4 times the risk of dying in a fall	
4	About 7 people could get lung cancer	The risk of dying in a car crash	
2	About 4 people could get lung cancer	The risk of dying from poison	Consider fixing structure between 2 and 4 pCi/l
1.3	About 2 people could get lung cancer	(Average indoor radon level)	Reducing radon levels below 2pCi/l is difficult
0.4	-	(Average outdoor radon level)	

Note: Risk may be lower for former smokers.

* Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003).

** Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports.

The worst-case scenario for radon exposure would be that a large area of tightly sealed homes provided residents high levels of exposure over a prolonged period of time without the resident being aware. This worst-case scenario exposure then could lead to a large number of people with cancer attributed to the radon exposure.

Table 4.3.6.2-2: Most Likely Lifelines Impacted by Radon Exposure

LIFELINES	NOTES
	Direct exposure to radon can pose serious health risks and impact the safety of the community.
	Shelters may be at risk if exposed to radon.
	Exposure will increase the chances of lung cancer-causing potential increase in the amount of services and resources needed if communities develop more instances of cancer.

4.3.6.3. Past Occurrence

Current data on abundance and distribution of radon as it affects individual houses in the state of Pennsylvania in general is considered incomplete and potentially biased.

Venango County is no exception. The EPA has estimated that the national average indoor radon concentration is 1.3 pCi/L and the level for action is 4.0 pCi/L; however they have estimated that the average indoor concentration in Pennsylvania basements is about 7.1 pCi/L and 3.6 pCi/L on the first floor (PADEP, 2019).

The Pennsylvania Department of Environmental Protection Bureau of Radiation Protection provides information for homeowners on how to test for radon in their houses. If a test results in radon concentrations over 4 pCi/L, then the Bureau works to help the homeowners make repairs to their houses to mitigate against high radon levels. The total number tests reported to the Bureau since 1990 and their results are provided by zip code on the Bureau's website. However, this information is only provided if over 30 tests total were reported in order to best approximate the average for the area.

In Venango County, 9 zip codes had sufficient test results reported to the Bureau to list their findings, which are shown in Table 4.3.6.3-1.

ZIP CODE	AREA OF VENANGO COUNTY	BASEMENT			FIRST FLOOR		
		NUMBER OF TESTS	MAXIMUM RESULT (pCi/L)	AVERAGE RESULT (pCi/L)	NUMBER OF TESTS	MAXIMUM RESULT (pCi/L)	AVERAGE RESULT (pCi/L)
16038	Barkeyville Borough	81	135.9	8.7			
16127	Irwin Township	1135	70.4	4.6	118	24.2	3.2
16301	City of Oil City	1211	280	11.7	196	161.5	6.4
16319	Cranberry Township	80	73.9	9.5			
16323	City of Franklin	919	271	5.9	162	94.8	3.7
16341	Pleasantville Borough	51	99.9	8.6			
16342	Polk Borough	40	132.5	14			
16346	Cranberry Township	164	65.4	8.6			
16354	Cherrytree Township	283	190.6	9.8	42	89.6	5.5
16373	Emlenton Borough	144	295.7	28.6	44	105.5	12.3

4.3.6.4. Future Occurrence

Radon exposure in Venango County is inevitable given present soil, geologic, and geomorphic factors. Future occurrence of high radon level hazards can be considered possible as defined by the Risk Factor Methodology probability criteria (see Table 4.4-1).

Development in areas where previous radon levels have been significantly high will continue to be more susceptible to exposure. However, new incidents of concentrated exposure may occur with future development or deterioration of older structures. Exposure can be limited with proper testing for both past and future development and appropriate mitigation measures.

Climate change and radon exposure, though distinct issues, intersect in ways that can influence public health. As climate change alters precipitation patterns and increases the frequency of extreme weather events, soil moisture levels fluctuate, which can impact radon release from the ground. Drier conditions can enhance radon migration into homes, while wetter soils might impede it. Additionally, rising temperatures often lead to increased use of air conditioning and improved home insulation, resulting in tightly sealed buildings with reduced ventilation. This can trap radon indoors, elevating exposure risks. Extreme weather events, such as heavy rainfall or flooding, can damage building foundations and radon mitigation systems, creating new pathways for radon entry and necessitating repairs. Addressing these intertwined challenges requires integrating radon mitigation into climate adaptation strategies, ensuring that efforts to improve energy efficiency and building resilience also consider radon risk reduction.

4.3.6.5. Vulnerability Assessment

Structures in Venango County, particularly in high vulnerability areas as shown in Figures 4.3.6.1-2 and Figure 4.3.6.1-3 could be susceptible to moderate levels of radon.

Smokers can be up to ten times more vulnerable to lung cancer from high levels of radon depending on the level of radon they are exposed to. Older houses that have crawl spaces or unfinished basements are more vulnerable as well because of the increased exposure to soils which could be releasing higher levels of radon gas. Additionally, houses that rely



Figure 4.3.6.5-: Radon System Manometer in Basement (Scott Home Inspection, 2017) (Radon, 2024)



Figure 4.3.6.5-2: Radon Mitigation Systems (Scott Home Inspection, 2017) (Radon, 2024)

on wells for their water may face an additional risk, although this type of exposure is low and rare in Pennsylvania (US EPA,2016).

Proper testing for radon levels should be completed throughout Venango County, especially in the areas of higher incidence levels and for vulnerable populations that face the contributing risks described above. This testing will determine the level of vulnerability that residents face in their homes, as well as in their businesses and schools.

The EPA determines that an average radon mitigation system costs \$1,000. The EPA also states that current state surveys show that one home in five has elevated radon levels. Using this methodology, radon loss estimation is factored by assuming that 20 percent of the buildings within the zip codes with elevated test results have elevated radon values and each would require a radon mitigation system installed at the EPA estimated average of \$1,000.

The data from the DEP (shown in table 4.3.6.5-1) reveals that numerous facilities across Venango County have recorded indoor radon levels exceeding the EPA's action threshold of 4.0 pCi/L. These elevated levels were found in a variety of buildings primarily residential homes, but also schools and non-residential structures—across multiple municipalities. The majority of high readings were detected in basements, which is consistent with radon's tendency to accumulate in lower levels of buildings due to its origin from soil gases. Municipalities such as Oil City, Franklin, and Emlenton showed particularly high counts of affected sites, indicating potential regional radon hotspots. This data underscores the importance of regular radon testing and mitigation, especially in areas known to have naturally high radon emissions, to protect public health and indoor air quality.

The radon test data provided in Table 4.3.6.5-1 from the Pennsylvania Department of Environmental Protection (PA DEP) reflects only those tests that have been conducted by certified radon professionals and reported to the DEP. It does not include results from private or unreported tests, such as those conducted by homeowners using over-the-counter kits. As such, the absence of data for a facility or area does not necessarily indicate that radon testing has not occurred or that radon is not present. This limitation should be considered when interpreting radon exposure risk across the county.

Table 4.3.6.5-1 Summary of Facilities in Venango County with Radon Levels Above 4.0 pCi/L

Municipality Name	Building Purpose	Test Floor Level	Number of Facilities
CLINTONVILLE	Not Collected	BASEMENT	2
CLINTONVILLE	Residential	BASEMENT	1
COOPERSTOWN	Residential	BASEMENT	2
CRANBERRY	Not Collected	BASEMENT	10
CRANBERRY	Not Collected	FIRST FLOOR	1
CRANBERRY	Residential	BASEMENT	5
CRANBERRY	Residential	FIRST FLOOR	1

CRANBERRY	Residential	SLAB ON GRADE	1
EMLENTON	Not Collected	BASEMENT	16
EMLENTON	Residential	BASEMENT	29
EMLENTON	Residential	FIRST FLOOR	17
EMLENTON	Residential	SECOND FLOOR	2
EMLENTON	Residential	SLAB ON GRADE	3
EMLENTON	School	BASEMENT	1
FRANKLIN	Not Collected	BASEMENT	58
FRANKLIN	Not Collected	FIRST FLOOR	7
FRANKLIN	Not Collected	UNKNOWN	5
FRANKLIN	Residential	BASEMENT	107
FRANKLIN	Residential	CRAWL SPACE	1
FRANKLIN	Residential	FIRST FLOOR	11
FRANKLIN	Residential	SLAB ON GRADE	15
FRANKLIN	Residential	UNKNOWN	1
OIL	Residential	BASEMENT	1
OIL CITY	Non-Residential	BASEMENT	2
OIL CITY	Not Collected	BASEMENT	123
OIL CITY	Not Collected	FIRST FLOOR	12
OIL CITY	Not Collected	UNKNOWN	4
OIL CITY	Residential	BASEMENT	223
OIL CITY	Residential	FIRST FLOOR	33
OIL CITY	Residential	SLAB ON GRADE	28
OIL CITY	Residential	UNKNOWN	1
PLEASANTVILLE	Residential	BASEMENT	4
POLK	Not Collected	BASEMENT	8
POLK	Residential	BASEMENT	4
ROUSEVILLE	Residential	FIRST FLOOR	1
UTICA	Residential	BASEMENT	1
UTICA	Residential	FIRST FLOOR	1

Radon exposure has minimal environmental impacts. Due to the relatively short half-life of radon, it tends to only affect living and breathing organisms such as humans or pets which are routinely in contained areas (i.e. basement or house) where the gas is released.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will have no effect on the radon exposure vulnerability of the current communities in Venango County.

4.3.6.6. Equity in Vulnerable Communities

Communities with an aged housing stock (see Table 4.3.2.5 Age of Housing Structures in Venango County, by Municipality) are the most likely to be exposed to radon exposure as

radon creeps in through poor foundations or ventilation systems. Low-income communities are more likely to have aged housing stock, so proper awareness is essential. Chart 2.3-2 Venango County Mean Household Income, by Municipality cross referenced with Table 4.3.25 reveals that municipalities that have a lower household income such as Polk Borough also have an older housing stock. Public awareness materials should also be provided in secondary languages. Low-income communities may also be at an increased risk as home repairs, testing kits, and mitigation systems are significant financial investments. Additionally, those who live in rural areas, where geological conditions may lead to higher radon levels, are at an increased risk.

4.3.7. Tornado and Windstorm

4.3.7.1. Location and Extent

Tornadoes and potentially damaging high winds occur throughout Pennsylvania. Tornadoes and high winds can be experienced at any location in Venango County.

A tornado, a violently rotating funnel-like vortex, is an extraordinary feature of severe thunderstorms. A condensation funnel does not need to reach to the ground for a tornado to be present; a debris cloud beneath a thunderstorm is all that is needed to confirm the presence of a tornado, even in the total absence of a funnel. While the extent of tornado damage is usually localized, the extreme winds of this vortex can be among the most destructive on earth when they move through populated, developed areas.



Tornadoes can occur at any time during the day or night but are most frequent during late afternoon into early evening, the warmest hours of the day. May to August is the most likely time for tornadoes to occur in Pennsylvania. Tornado movement is characterized in two ways: direction and speed of spinning winds and forward movement of the tornado, also known as the storm track. Rotational wind speeds of the vortex can range from 100 mph to more than 250 mph. In addition, the speed of forward motion can be zero to 45 or 50 mph. Therefore, some estimates place the maximum velocity (combination of ground speed, wind speed, and upper winds) of tornadoes at about 300 mph.

The forward motion of the tornado path can be a few hundred yards or several hundred miles in length. The width of tornadoes can vary greatly, but generally ranges from less than 100 feet to over a mile in width. Some tornadoes never touch the ground and are short-lived, while others may touch the ground several times.

Straight-line winds often accompany tornadoes and are caused by the movement of air from areas of higher pressure to areas of lower pressure - the greater the difference in pressure, the stronger the winds. Windstorms are generally defined as sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration.

4.3.7.2. Range of Magnitude

The destruction caused by tornadoes ranges from light to inconceivable depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damages to structures of light construction, such as mobile homes. The impact of tornado hazards is ultimately dependent on the population or amount of property present in the area in which the tornado occurs. Tornado events are often so severe that property loss

or human fatality is typically inevitable if evacuation or proper construction standards are not implemented.

Since 2007, the Enhanced Fujita Scale (or the –EF-Scale) has been used in the United States to describe the magnitude of tornadoes. Prior to 2007, the Fujita Scale (F-Scale) was commonly used to describe magnitude. The EF scale is based on new information about the relationship between wind speed given in miles per hour (mph) and corresponding damages. It categorizes tornadoes from EF0 to EF5, with EF0 being the lowest magnitude yet most commonly occurring type of tornado. The strongest tornado recorded in Venango County was a category F4. Table 4.3.7.2-1 shows the relationship between the EF- and F- Scales. The types of damages that can be expected with each category of tornado are described in Table 4.3.7.2-2.

Table 4.3.7.2-1: Enhanced Fujita Sscale (ef-scale) Categories with Associated Wind Speeds

FUJITA SCALE		ENHANCE FUJITA SCALE	
F NUMBER	3-SECOND GUST (MPH)	EF NUMBER	3-SECOND GUST (MPH)
0	45-78	0	65-85
1	79-117	1	86-110
2	118-161	2	111-135
3	162-209	3	136-165
4	210-261	4	166-200
5	262-317	5	Over 200

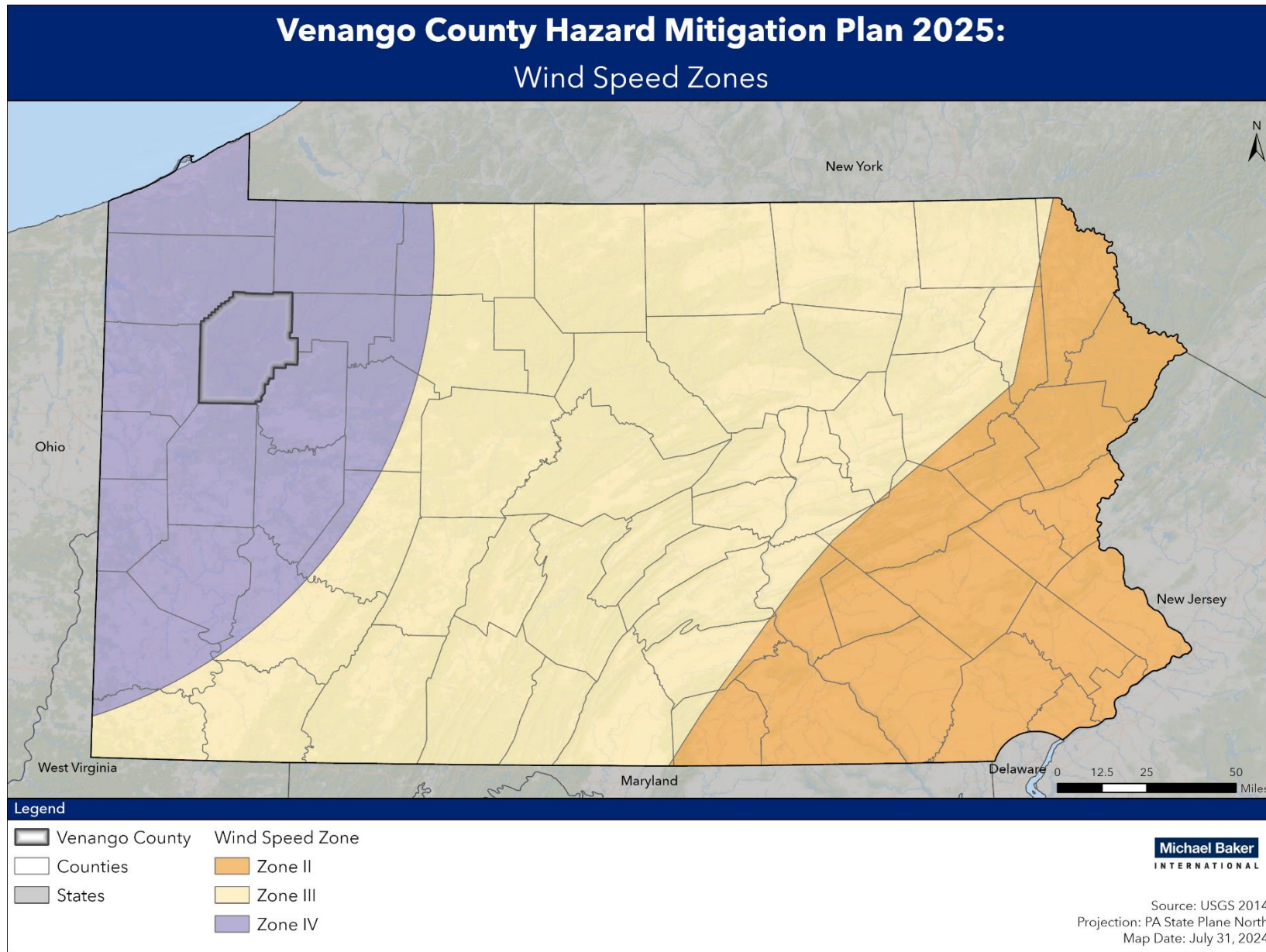
Table 4.3.7.2-2: Expected Tornado Damages

F OR EF SCALE	EXAMPLES OF POSSIBLE DAMAGE
0	Light damage. Some damage to chimneys; broken tree branches; shallow-rooted trees pushed over; damage to sign boards.
1	Moderate damage. Roof surface peeled off; mobile homes pushed off foundations or overturned; moving automobiles pushed off roads.
2	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
3	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
4	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown, and large missiles generated.

Table 4.3.7.2-2: Expected Tornado Damages	
F OR EF SCALE	EXAMPLES OF POSSIBLE DAMAGE
5	Catastrophic damage. Well-built houses swept away completely, leaving only the slab foundations.

Figure 4.3.7.2-1 wind speed zones developed by the American Society of Civil Engineers based on information including 40 years of tornado history and over 100 years of hurricane history. It identifies wind speeds that could occur across the United States to be used as the basis for design and evaluation of the structural integrity of shelters and critical facilities. All of Venango County falls within Zone IV. Shelters and critical facilities should be able to withstand a 3-second gust of up to 250 mph, regardless of whether the gust is the result of a tornado, coastal storm, or windstorm event. Therefore, these structures should be able to withstand the wind speeds experienced in an F5 tornado event.

Figure 4.3.7.2-1: Wind Speed Zones



Since tornado and windstorm events are typically localized, environmental impacts are rarely widespread. However, where these events occur, severe damage to buildings and plant species is likely. This includes loss of trees and an increased threat of wildfire in areas where dead trees are not removed. Hazardous material facilities should meet design requirements to withstand a three-second gust of up to 160 mph in order to prevent release of hazardous materials into the environment.

The potential impacts of a tornado or windstorm on community lifelines are as follows:

Table 4.3.7.2-3: Most likely lifelines impacted by Tornadoes or Windstorms	
LIFELINES	NOTES
	Government officials, including police and fire, will be needed for community safety due to potential harm from tornadoes, high winds, and associated weather conditions.
	Tornadoes and windstorms cause significant damage to agricultural operations and structures.
	Energy lifelines in response to recovery due to potential direct damage from tornadoes and windstorms.
	Material storage facilities and operations may be damaged due to significant damage from tornadoes and windstorms.

4.3.7.3. Past Occurrence

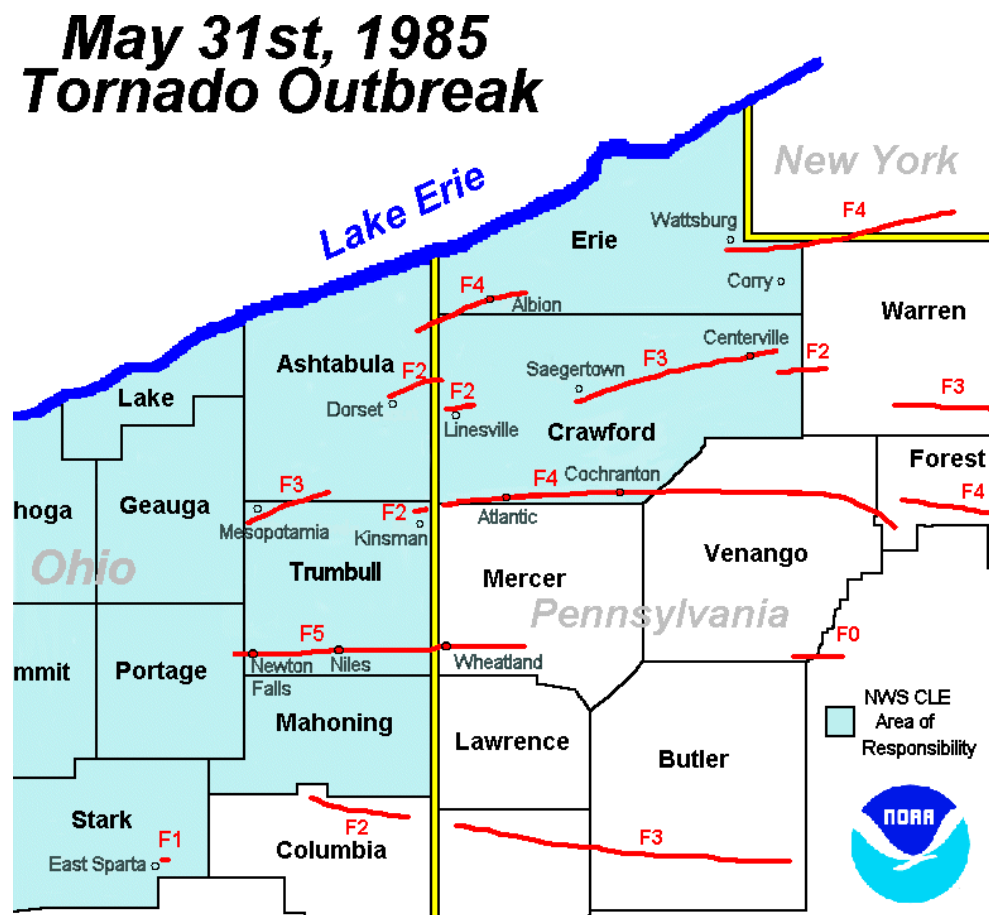
Tornadoes have occurred throughout Pennsylvania. Western and southeastern sections of the Commonwealth have been struck more frequently. On May 31, 1985, a very rare outbreak of 21 tornadoes tracked across northeast Ohio and northwest Pennsylvania, including Erie, Warren, Crawford, Forest, Mercer, Venango, Mercer, and Butler counties, killing 76 people (Figure 4.3.7.3- 1). One of these tornadoes was rated an F6 while six were rated F4s on the old Fujita Scale. The deadliest tornado touched down near Jamestown, PA as an F4 on the old Fujita Scale, killing 23 people and destroying 371 homes. It stayed on the ground for over an hour and produced a 56-mile-long damage path.

During that same storm in May 1985, one of the four F4 tornados that day entered the northern portion of Venango County and travelled across the width of the county. Three people were killed in Cooperstown. Two houses and nearly a dozen trailers were destroyed between Dempseytown and Cherrytree, with 5 deaths reported. On the same day, an F0 tornado struck extreme southeast Venango County. It traveled from 4 miles

west-northwest of Emlenton to 2 miles northeast of Emlenton, for a total path length of about 6 miles. A couple trailers and 5 houses were destroyed or severely damaged in Scrubgrass Township. Two injuries occurred; a man and his son were badly hurt when their trailer was destroyed. In total, the tornadoes on May 31, 1985 caused 8 deaths and 45 injuries in Venango County.

The HMSC recognizes that this type of tornado is extremely rare and that this event would represent a worst-case scenario only. More typical wind hazard events in Venango County involve tree and limb damage, with barn roof damage typically sustained as these represent some of the oldest and most susceptible structures.

Figure 4.3.7.3-1: May 31st, 1985 Tornado Outbreak

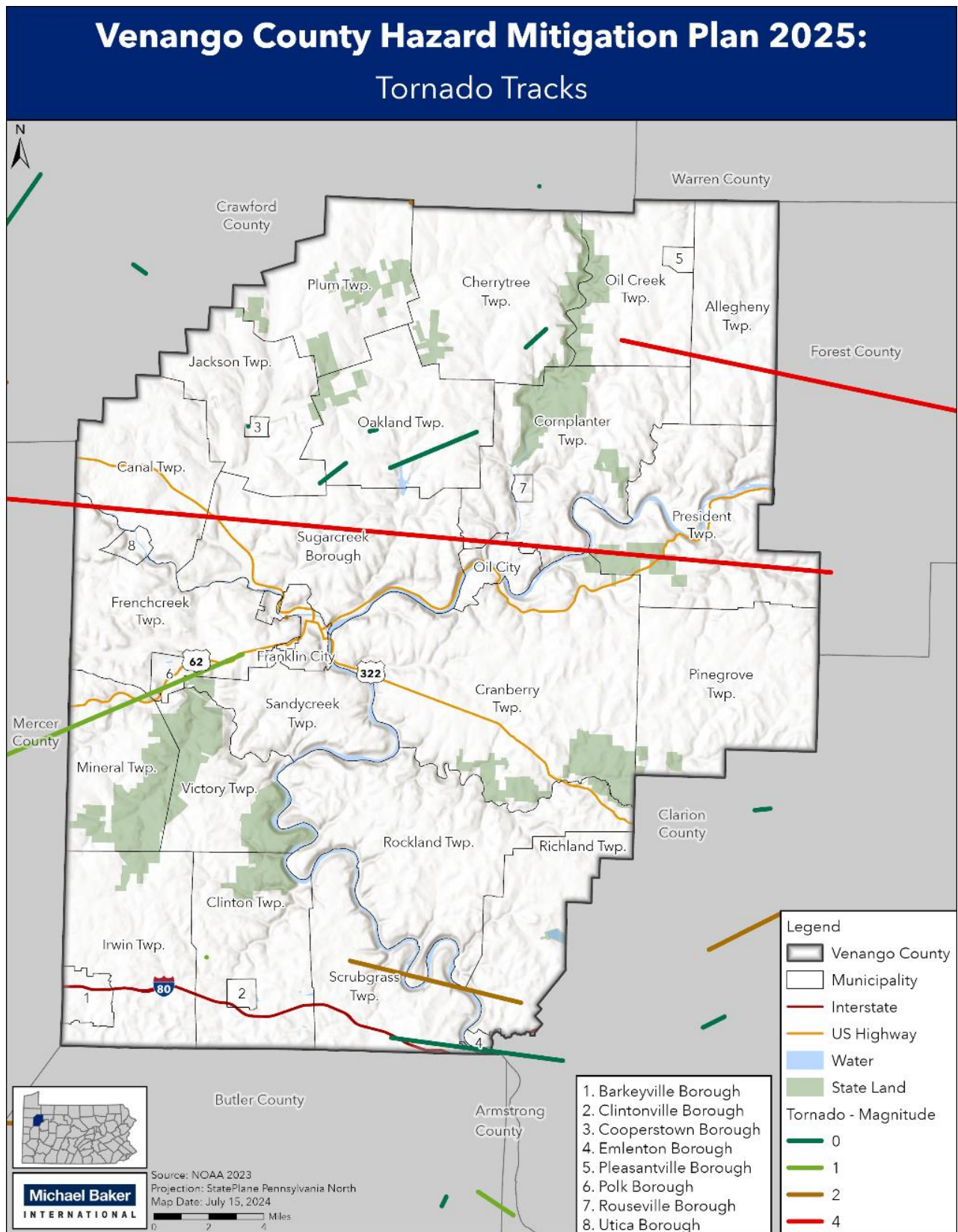


A list of tornado events that have occurred in Venango County between 1950 and 2024 is shown in Table 4.3.11-4 with an associated F-Scale magnitude. Figure 4.3.11-1 also shows the approximate location of previous events from 1975 to 2023 that had center of circulation located in or tracked through Venango County.

Table 4.3.7.3-1: History of Tornadoes in Venango County					
LOCATION	DATE	F-SCALE	DEATHS	INJURIES	PROPERTY DAMAGE
THORNBURGH	7/29/2021	EF0	0	0	15.00k
PETROLEUM CENTER	4/14/2019	EF0	0	0	0.00K
FRANKLIN FISHER ARPT	4/14/2019	EF0	0	0	0.00K
OIL CITY	5/25/2004	F0	0	0	0.00K
RAYMILTON	4/28/2002	F1	0	0	250.00K
VENANGO CO.	6/22/1985	F0	0	0	0.00K
VENANGO CO.	5/31/1985	F0	0	0	0.00K
VENANGO CO.	5/31/1985	F2	0	1	0.00K
VENANGO CO.	5/31/1985	F4	0	0	0.00K
VENANGO CO.	5/31/1985	F4	0	5	25.000M
VENANGO CO.	5/31/1985	F4	8	40	25.000M
VENANGO CO.	8/7/1981	F2	0	0	250.00K
VENANGO CO.	9/24/1977	EF0	0	0	25.00K
VENANGO CO.	7/2/1974	F1	0	0	0.00K
TOTAL			8	46	50.525M

Figure 4.3.7.3-2 shows Venango County's tornado tracks by magnitude. There have been two F-5 tornadoes that have gone through the County. F-0 is the most frequent occurrence in Venango with multiple occasions in and around the County.

Figure 4.3.7.3-2: Venango County Tornado Tracks



Windstorm events may be the result of thunderstorms, hurricanes, tropical storms, winter storms, or nor'easters. There have been over 250 events with wind speeds of greater than 50 knots in Venango County since 2000. These events frequently occurred in conjunction with thunderstorms. These events have resulted in 2 death, 3 injuries and nearly \$4M.

Table 4.3.7.3-2: High Wind, Strong Wind, and Thunderstorm Wind Occurrences with Death or Injury Since 2000

Location	County/Zone	Date	Type	Magnitude	Death	Injury	Property Damage Estimate
Venango	VENANGO (ZONE)	09/14/2008	High Wind	65 kts. EG	1	0	1.000M
Franklin	VENANGO CO.	07/24/2022	Thunderstorm Wind	50 kts. EG	1	0	10.00K
Franklin	VENANGO CO.	06/14/2004	Thunderstorm Wind	52 kts. EG	0	2	30.00K
Total					2	2	1.04M

4.3.7.4. Future Occurrence

The frequency of tornadoes and windstorms is expected to remain constant across Venango County. These storms can affect the entire county, windstorms especially can occur across the entire county during one event. The probability of a tornado or windstorm directly affecting Venango County is relatively minor, and there have been some significant past damages. For the period between 1950 and 2024, 14 tornadoes were reported in Venango County by NCEI. However, changing weather patterns have led to more frequent and extreme storms across the Nation. This includes intense winds associated with severe rain and tropical storms. Further, the annual number of very hot days is growing. Warmer and wetter conditions provide more energy for thunderstorms and tornadoes. While it is difficult to predict, it is expected that these conditions will continue to intensify in Venango County. Overall, the probability of future tornado and windstorms should be considered likely according to the Risk Factor Methodology (see Table 4.4 -1).

An F4 tornado, with a 0.01-percent-annual probability of occurring, can carry wind velocities of 200 mph, resulting in a force of more than 100 pounds per square foot of surface area. This is a "wind load" that exceeds the design limits of most buildings. While most of the recent windstorms and tornadoes have occurred outside of the county, their proximity contributes to future risk. Because more windstorms have been seen in the western Pennsylvania region, it is possible that an increasing number of tornadoes will be seen in Venango County.

According to NCEI, there have been over 257 wind events in Venango County between 1950 and 2024. Venango County experiences windstorm events more commonly than tornadoes, which causes power failures, loss of communication networks, and residents requiring temporary shelters and provision of supplies. The probability of tornadoes and windstorms in Venango County can be considered *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

4.3.7.5. Vulnerability Assessment

For tornadoes or high winds, aged and dilapidated structures or structures not built to applicable building codes are more susceptible to damage. Mobile homes and campgrounds are especially susceptible to damage due to tornado or high wind. Strong winds can rip roofs off of any dilapidated structures and overturn mobile homes. Past experiences with tornadoes in Venango County shows that death and injury are indeed possibilities. Vulnerability to the effects of a tornado or high wind is somewhat dependent upon the age of a structure because as building codes become more stringent, buildings are capable of enduring greater wind forces.

In Venango County, high winds occur annually. The most common detrimental effects are interruptions in power supply and communications services due to downed wires and blocked roadways due to downed trees. Most severe power failures or outages are regional events. With the loss of power, electrical-powered equipment and systems will not be operational. Examples include lighting, HVAC and ancillary support equipment, communication systems, ventilation system, refrigerators, sterilizers, and medical equipment. This can cause food spoilage, loss of heat or air conditions, basement flooding (sump pump failure), lack of light, loss of water (well pump failure), lack of phone service, or lack of internet. While it is most often a short-term nuisance rather than a catastrophic hazard, utility interruptions can cause challenges for communications and response, particularly in more rural areas of the county. A worst-case scenario for utility interruption in Venango County would involve a power outage during winter snow or ice storms, which have the potential to cause power outages for prolonged periods of time.

High winds often occur during hurricanes, tropical storms, and nor'easters. Information about potential annualized losses due to hurricane winds can be found in [Section 4.3.10](#).

All structures and infrastructure might be exposed to the effects of a tornado or other high winds. Depending upon the severity of a tornado or high wind, any existing structures might be damaged to some extent. Any future structures might be exposed to tornadoes or high winds as this hazard does not occur in specific locations. However, future buildings will be somewhat protected from the effects of tornado or high wind as they will meet the most current State building code requirements for bracing and roof design.

Manufactured housing (i.e. mobiles homes or trailers) is particularly vulnerable to high winds and tornadoes. The U.S. Census Bureau defines manufactured homes as "movable dwellings, eight feet or wider and 40 feet or longer, design to be towed on its own chassis,

with transportation gear integral to the unit when it leaves the factory, and without need of a permanent foundation (U.S. Census Bureau, 2020).” They can include multi-wide and expandable manufactured homes but exclude travel trailers, motor homes, and modular housing. Due to their lightweight and often unanchored design, manufactured housing is extremely vulnerable to high winds and will generally sustain the most damage.

As of 2018, there are an estimated total of 2,671 mobile home structures in Venango County. Table 4.3.7.5-1 details the total residential structures and the number of mobile home structures in each municipality. Cranberry Township, President Township, and Sugarcreek Borough have the most mobile homes, 317, 211, and 204 respectively. Clintonville and President have the highest percentages of residential structures that are mobile homes (34 percent and 27 percent, respectively). Higher concentrations of mobile home structures increase the vulnerability of the area to tornadoes and windstorms.

Table 4.3.7.5-1: Mobile Homes in Venango County

Municipality	Total Structures	Total Mobile Homes	Percent Mobile Homes
Allegheny Township	225	23	10%
Barkeyville Borough	159	28	18%
Canal Township	522	94	18%
Cherrytree Township	836	104	12%
Clinton Township	563	81	14%
Clintonville Borough	244	84	34%
Cooperstown Borough	215	8	4%
Cornplanter Township	1,316	70	5%
Cranberry Township	3,487	317	9%
Emlenton Borough	379	6	2%
Franklin City, City of	2,988	19	1%
Frenchcreek Township	899	136	15%
Irwin Township	727	90	12%
Jackson Township	570	131	23%
Mineral Township	330	69	21%
Oakland Township	747	72	10%
Oil City, City of	4,757	6	0%
Oil Creek Township	496	91	18%
Pinegrove Township	698	106	15%
Pleasantville Borough	471	50	11%
Plum Township	552	81	15%
Polk Borough	260	27	10%
President Township	775	211	27%
Richland Township	602	77	13%
Rockland Township	1,465	171	12%
Rouseville Borough	253	12	5%
Sandycreek Township	1,235	115	9%

Scrubgrass Township	733	111	15%
Sugarcreek Borough	2,516	204	8%
Utica Borough	126	9	7%
Victory Township	338	68	20%
TOTAL	29,484	2,671	9%

Overall, however, tornado and windstorm events are not specific to select parts of the County. Rather, a tornado could strike in any part of the County at any time and could cause as much or as little damage as possible for the given magnitude event. Historically, however in recent history, Venango County has been most typically impacted by minimal (EF0-EF2) tornadoes, with no event resulting in significant monetary damages.

Environmental impacts from tornadoes can include debris in streams, wetlands, and other sensitive environmental features. Tree damage is commonly seen after high wind events. Hazardous material facilities should meet design requirements for the wind zones identified in Figure 4.3.10.1-1 to prevent release of hazardous materials into the environment.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will have no effect on the tornado and windstorm vulnerability of the current communities in Venango County.

4.3.7.6. Equity in Vulnerable Communities

Regarding equity, there are several communities of consideration when it comes to planning for tornadoes and windstorms. Manufactured home communities, primarily mobile homes, are extremely at risk in the face of tornadoes as they are highly susceptible to high-speed winds. Additionally, households without vehicles, smartphones, or people with disabilities are also at higher risk if evacuation becomes necessary as all of these factors present significant barriers to active response times.

4.3.8. Wildfire

4.3.8.1. Location and Extent

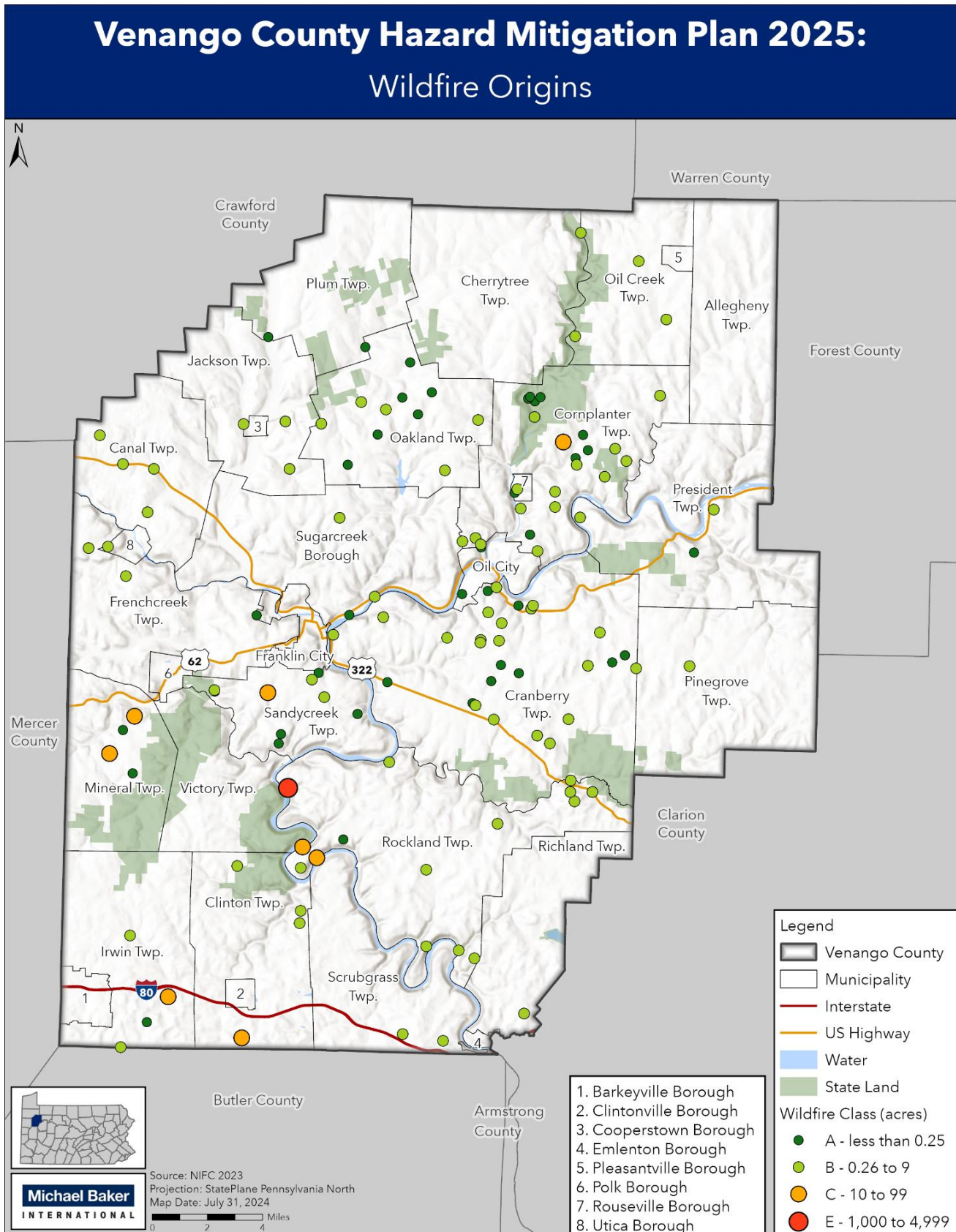
A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines, and similar facilities. An urban-wildland interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.



Wildfires can occur at any time of the year but are most likely to occur in the Venango County during a drought. Wildland fires in Pennsylvania can occur in fields, grass, and brush as well as in the forest itself. Under dry conditions or drought, wildfires have the potential to burn forests as well as croplands. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Most wildland fires are caused by human carelessness, negligence, and ignorance. In 2017, debris burning accounted for the largest number of wildfires, while incendiary causes accounted for the largest number of acres burned in Pennsylvania (DCNR, 2017). However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion.

Portions of the Cornplanter (District 14) and Clear Creek (District 8) State Forests are located in Venango County. These forests, as well as State Game Land areas and Oil Creek State Park, are of particular concern for wildfire events due to the large area of expanded woodland. Figure 4.3.9-2 illustrates the forest districts within Pennsylvania. Figure 4.3.8.1-1 shows the locations of wildfire origins within Venango County as reported to DCNR.

Figure 4.3.8.1-1: Venango County Wildfire Origins



4.3.8.2. Range of Magnitude

Wildfire events can range from small fires that can be managed by local firefighters to large fires impacting many acres of land. Large events may require evacuation from one or more communities and necessitate regional or national firefighting support. The impact of a severe wildfire can be devastating. A wildfire has the potential to kill people, livestock, fish, and wildlife. They often destroy property, valuable timber, forage, and recreational and scenic values.

In addition to the risk wildfires pose to the general public and to property owners, the safety of firefighters is also a concern. Although loss of life among firefighters does not occur often in Pennsylvania, it is always a risk. More common firefighting injuries includes falls, sprains, abrasions, or heat-related injuries such as dehydration. Response to wildfires also exposes emergency responders to the risk of motor vehicle accidents and can place them in remote areas away from the communities that they are chartered to protect.

Vegetation loss is often a concern, but it typically is not a serious impact since natural re-growth occurs with time. The most significant environmental impact is the potential for severe erosion, silting of stream beds and reservoirs, and flooding due to ground-cover loss following a fire event.

Wildfires have a positive environmental impact in that they burn dead trees, leaves, and grasses to allow more open spaces for new and different types of vegetation to grow and receive sunlight. Another positive effect of a wildfire is that it stimulates the growth of new shoots on trees and shrubs and its heat can open pinecones and other seed pods.

The largest wildfire in Pennsylvania in recent years burned 10,000 acres in the north-central area of the Commonwealth. This fire was controlled within a week. It destroyed five cabins, but there was no loss of life. Another large wildfire burned 8,000 acres in the Poconos in 2016. About 100 people were evacuated and it took 130 firefighters to stop the blaze. Several other fires have burned over 2,000 acres each and again have been controlled within a week of the reported start. This kind of a scenario is somewhat likely in Venango County, where the largest wildfire reported, as see in Figure 4.3.8.1-1 , is a Class E wildfire (1,000-4,999 acres) in Rockland Township. There is also a number of class B and C wildfires across the county.

The potential impacts of wildfire on community lifelines are as follows:

Table 4.3.8.2-1: Most Likely Lifelines Impacted by Wildfire	
LIFELINES	NOTES
	Fire departments will need to respond and possibly recover where community safety is threatened.
	Shelter lifeline as wildfire directly threatens homes and potentially agricultural operations.
	Potential serious injuries and fatalities may occur.

4.3.8.3. Past Occurrence

DCNR reports that Fire Districts 8 & 14 which cover Venango County have averaged 76 and 44 wildfires burning on average 208 and 127 acres respectively per year between 2010 and 2024. Table 4.3.8.3-1 lists the number of fires and the total acres burned in each district over the same period. This data accounts for more than just Venango County. However, it illustrates the regional risk from wildfire. At the time of this HMP, we could not find any updated information past 2019. Figure 4.3.8.3-1 shows the origin of wildfires in Venango County. Figure 4.3.8.3-2 Illustrates the locations of Pennsylvania Fire Districts.

Table 4.3.8.3-1: Wildfires in PA Fire Districts 8 & 14 (2010-2024) (DCNR, 2024)

	DISTRICT 8		DISTRICT 14	
YEAR	FIRES	ACRES BURNED	FIRES	ACRES BURNED
2024	77	109.02	98	136.05
2023	135	705.94	104	158.09
2022	51	115.04	51	28.2
2021	149	346.42	122	751.8
2020	96	170.91	61	88.8
2019	81	114.7	23	36.2

2018	85	116.3	43	116.1
2017	39	29.0	13	10.3
2016	59	182.9	59	149.3
2015	67	139.5	24	44.0
2014	141	377.5	14	5.5
2013	56	235.1	17	21.9
2012	73	103.0	17	123.5
2011	18	96.5	3	9.1
2010	8	274.4	17	225.2
TOTAL	1135	3116.2	666	1904

Figure 4.3.8.3-1: Venango County Wildfire Origins

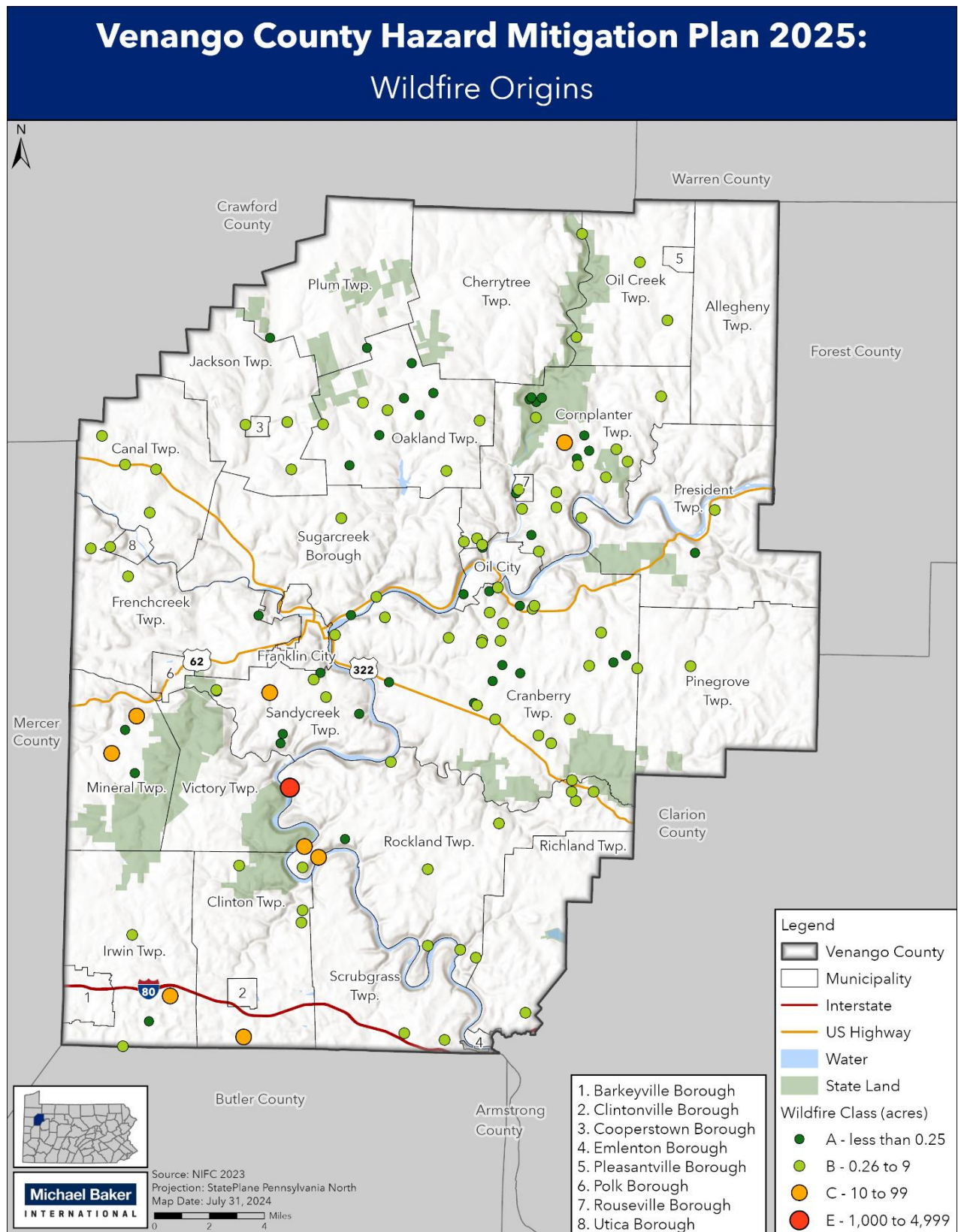


Figure 4.3.8.3-2: Pennsylvania State Forest Districts



Burn bans are a tool used to protect life, property, and natural resources from wildfire. Open burning is defined as the ignition and subsequent burning of any combustible material (garbage, leaves, grass, twigs, litter, paper, vegetative matter involved with land clearing, or any sort of debris) out-of-doors, either in a burn barrel or on the ground.

There are certain restrictions areas must abide by during a burn ban. The use of propane or gas stoves, charcoal briquette grills, or the use of tobacco in any form is not covered under county burn bans. Camp fires are allowed in the fire rings that confine and contain the camp fire in a designated state, federal, or Department of Environmental Protection licensed campground.

In November 2024, the Venango County Commissioners voted to issue a burn ban for all of Venango County. Due to the lack of precipitation in the area and the increase in brush fires, commissioners stated that the burn ban would be in effect until the area received significant rainfall.

DCNR Bureau of Forestry provided information regarding Venango County wildfires. The figures are not 100% accurate, as the Venango County Fire Department does not report all of their wildfires to DCNR. It was noted that the leading cause of wildfires in Venango County is debris burning. The following statistics reflect Venango County's wildfire history:

- 2014-2023: 119 wildfires for 119.5 acres.
- 2023: 16 wildfires for 14.3 acres
- 2024: 13 wildfires for 48.6 acres

4.3.8.4. Future Occurrence

Previous events indicate that annual wildfire occurrences in the County are expected. Weather conditions like drought can increase the likelihood of wildfires occurring. Many wildfires in the county are also the result of human-caused ignitions. Any fire, without the quick response or attention of fire-fighters, forestry personnel, or visitors to the forest, has the potential to become a wildfire. Therefore, the probability of an urban fire or wildfire occurring in Venango County is considered *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4-1).

It is important to note that 99% of wildfires in Pennsylvania are human caused (DCNR, 2019). Thus, there is rationale for including this hazard under the summary of human-made hazards. Nonetheless, the critical inference to draw from this statistic is the fact that the occurrence of future wildfire events will strongly depend on patterns of human activity. Wildfires may also be more likely after invasive species infestations or high wind events; these events would add additional potential fuel load to fire-prone locations.

4.3.8.5. Vulnerability Assessment

Figure 4.3.8.5-1 shows wildfire hazard potential in Venango County (USFS, 2023). Wildfire hazard is defined based on conditions that affect wildfire ignition and/or behavior such as fuel, topography and local weather. Based on this assessment, most of the county is identified as either having “low” or “very low” hazard potential. There are no high-risk areas identified. The non-burnable areas include water or asphalt.

Climate change is intensifying droughts and extreme temperatures (see [Section 4.3.1](#) for more information), which in turn increases the risk of wildfires. While wildfires are not as frequent or severe in Venango County, the region has experienced an increase in dry conditions and unreasonably warm weather which can increase fire risks. Drier forests and game lands, which Venango County has, provides fuel for fires. If a forest fire were to break out in Venango County, this makes it more difficult to control.

The number of fire incidents and fatalities should remain at the same level for the foreseeable future. Although newer buildings are constructed with higher safety standards and with more fire-resistant material, there are still a large number of older, highly vulnerable buildings throughout the County.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will reduce wildfire vulnerability by lowering human-caused ignitions. It also could increase vulnerability if fewer people are available to manage land, maintain fire outbreaks, and support local fire response efforts.

Table 4.3.8.5-1 shows the Critical Facilities and Community Lifelines that are vulnerable to wildfire in Venango County. These facilities are also noted in [Appendix E](#).

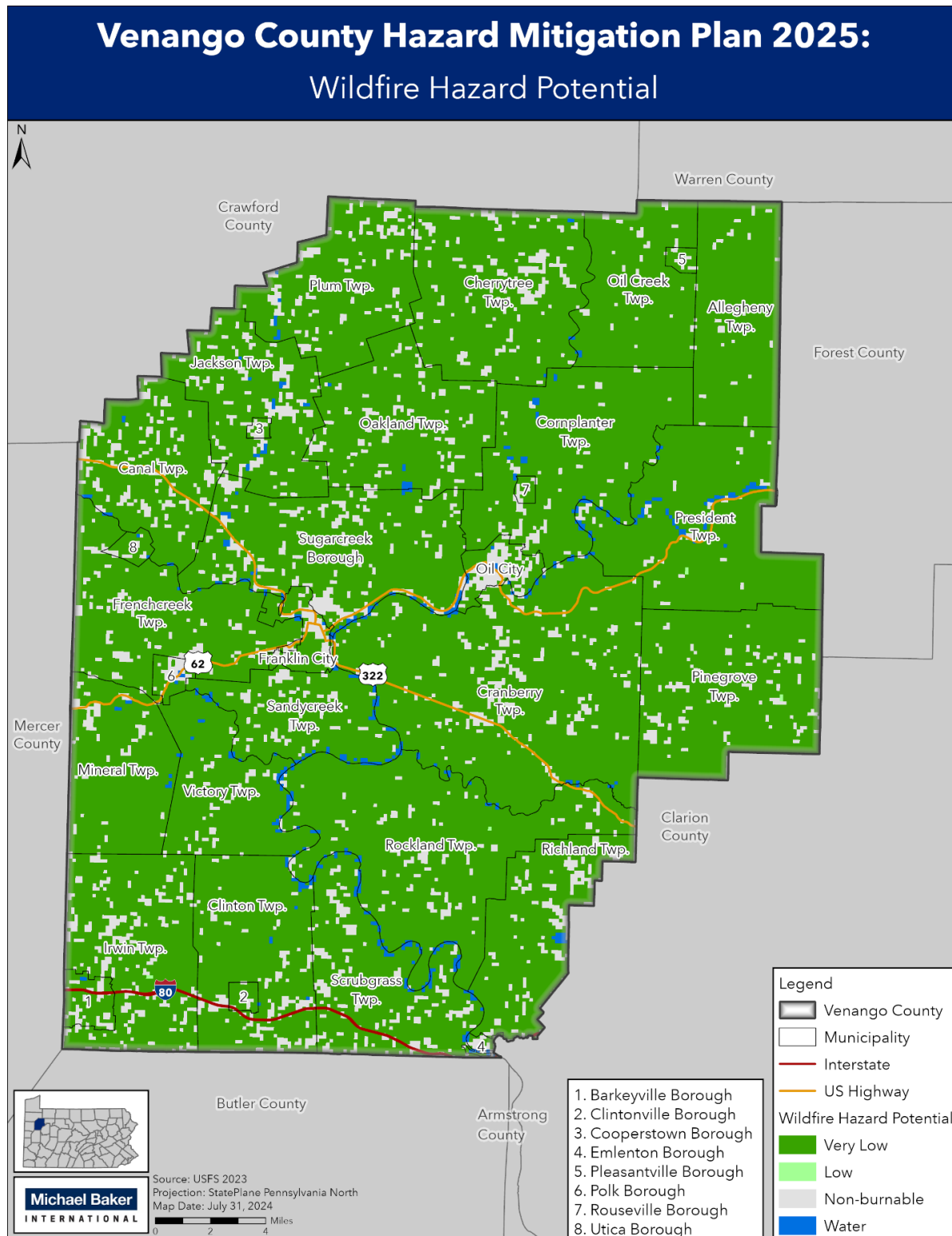
Table 4.3.8.5-1 Critical Facilities and Community Lifelines That Are Vulnerable to Wildfire				
Name	Address	Municipality	Zip Code	Type
Pennsylvania RSA 1 Limited Partnership	1418 Clintonville Road	Barkeyville Borough	16038	Cell Towers
Pennsylvania RSA 1 Limited Partnership	Thomas Road	Cornplanter Township		Cell Towers
Scrubgrass Township Building	173 McNany Road	Scrubgrass Township	16373	Municipal Buildings
Sugarcreek Borough Building	212 Fox Street	Sugarcreek Borough	16373	Municipal Buildings

Table 4.3.8.5-1 Critical Facilities and Community Lifelines That Are Vulnerable to Wildfire

Name	Address	Municipality	Zip Code	Type
Faith Christian Academy	235 Horsecreek Road	Cranberry Township	16346	Schools
Rockland Township Building	1115 Rockland Township Road	Rockland Township	16374	Municipal Buildings
Rockland Township Volunteer Fire Department	995 Pittsville Road	Rockland Township	16374	Fire Station
New Cingular Wireless PCS, LLC	717 Helper Road	Rockland Township	16374	Cell Towers
Kennerdell and Handsome Lake Energy	400 Seneca Hemlock Road	Rockland Township	16374	Municipal Buildings

If a wildfire were to impact critical lifelines in Venango County—such as the airport, cell towers, municipal buildings, and schools—the consequences could significantly amplify the vulnerabilities already identified in the county’s assessment. The airport, which may serve as a hub for emergency response or medical evacuation, could be rendered inoperable, delaying aid and isolating rural communities. Damage to cell towers would disrupt communications, hindering coordination among emergency services and leaving residents—especially those in remote areas—without access to alerts or assistance. Municipal buildings, often used as emergency operations centers or shelters, could be compromised, reducing the county’s capacity to manage the crisis. Schools, which may double as shelters or community support centers, would also be at risk, affecting both children and families relying on them for safety and resources. These impacts highlight the need for fire-resilient infrastructure and proactive planning to protect essential services during wildfire events.

Figure 4.3.8.5-1: Wildfire Hazard Potential



4.3.8.6. Equity in Vulnerable Communities

Communities in rural areas are more susceptible to wildfires than their urban counterparts due to potential proximity to large fire-prone wooded areas. These areas may have limited evacuation routes, increasing the risk for residents in the path of wildfires. Additionally, households with people with disabilities, specifically related to lung or respiratory issues, are going to be at an increased risk of harm, and county hospitals should be prepared.

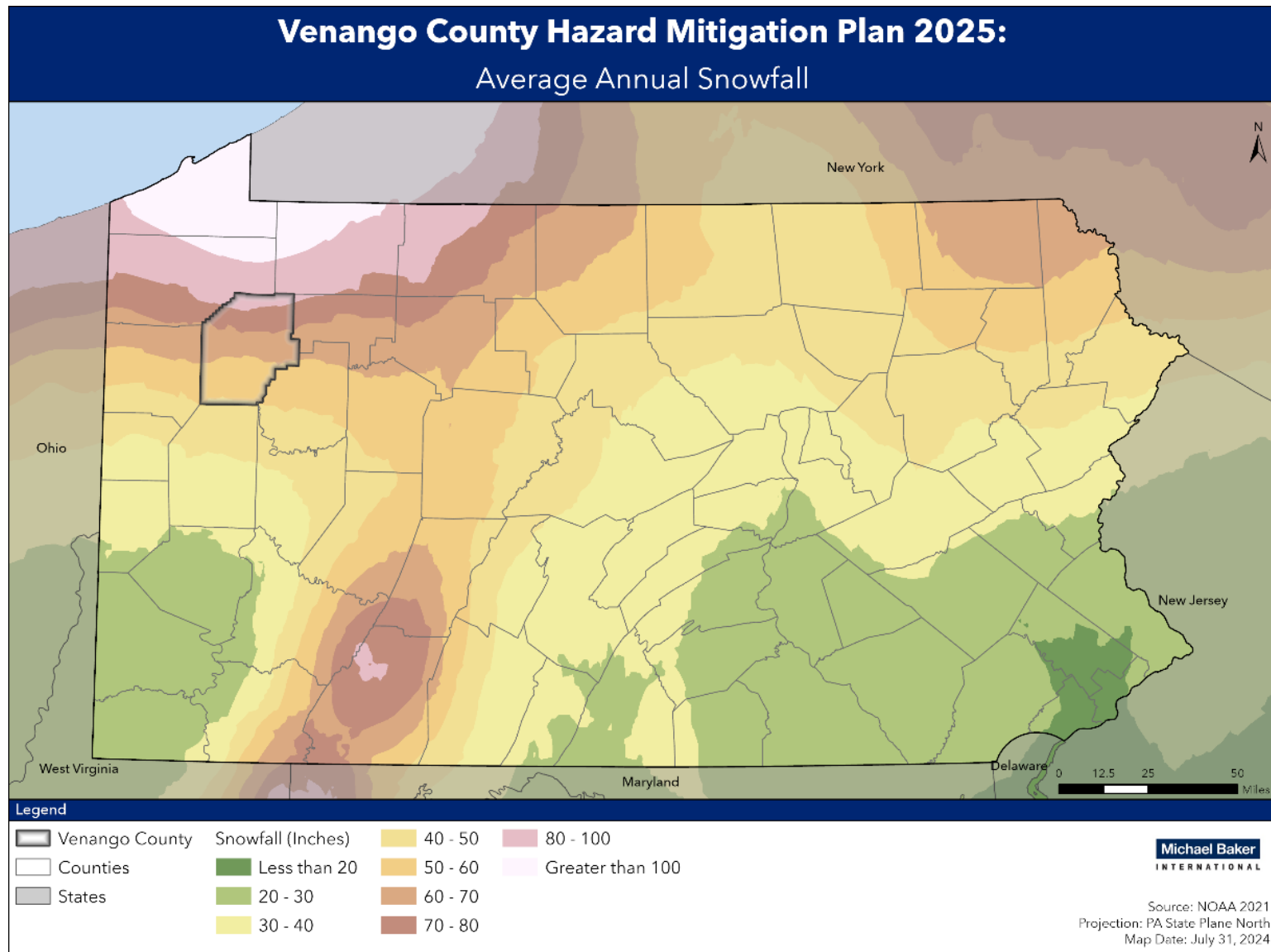
4.3.9. Winter Storm

4.3.9.1. Location and Extent

Heavy snow or ice occurs throughout the Commonwealth of Pennsylvania. Every municipality in Venango County is affected by these storms. Venango County experiences all levels of winter storms from ice storms and freezing rain to heavy snow and blizzards. Average snowfall differs throughout the county. The northern most region closest to Lake Erie experiences an annual average of 80-100 inches of snow. The more south you go in the county, the less average annual snowfall. The southern-most region of Venango County experiences an annual average of 50-60 inches (see Figure 4.3.9.1-1 below) (NOAA NWS, 2024a). This map continues to depict current conditions.



Figure 4.3.9.1-1: Average Annual Snowfall



4.3.9.2. Range of Magnitude

Winter storms consist of cold temperatures, heavy snow or ice and sometimes strong winds. Because winter storms are a regular occurrence in Venango County, they are considered hazards only when they result in damage to specific structures and/or overwhelm local capabilities to handle disruptions to traffic, communications, and electric power. The cost of removing snow, repairing damages, especially from ice storms, and the loss to businesses can have a negative economic impact for communities. Winter storms can generate other hazards such as infrastructure disruption (blocked roads and power outages), human-caused hazards (traffic accidents and trapped vehicles), and technological problems (communication system outages and overload). Winter storms can adversely affect roadways, utilities, business activities, and can cause loss of life, frostbite, or freezing.

Winter storms can include one or more of the following weather events:

Heavy Snowstorm: Accumulations of four inches or more in a six-hour period, or six inches or more in a 12-hour period.

Sleet Storm: Sleet is formed when snow falling to the earth partially melts as it passes through a layer of warm air. The precipitation then passes through a cold layer of air and refreezes into solid pellets. Sleet causes surfaces to become slippery, posing hazards to pedestrians and motorists.

Ice Storm: An ice storm occurs when rain freezes upon impact with the ground or other objects such as trees and power lines. Heavy accumulations of ice can bring down trees and utility poles, disrupting power and communication for days while crews make the necessary repairs. The icy conditions are also dangerous for pedestrians and vehicular traffic.

Blizzard: According to NWS, a blizzard is a severe snowstorm that occurs when winds reach 35 mph or more. The blowing snow reduces visibility to less than one-quarter of a mile for at least three hours. Storms that meet these criteria are not frequent in Venango County; however, storms that produce blizzard-like conditions are a common occurrence.

Severe Blizzard: Wind velocity of 45 mph, temperatures of 10° Fahrenheit or lower, a high density of snow with visibility frequently measured in feet prevailing over an extended period time.

Any of the above events can result in the closing of secondary roads, particularly in rural locations, loss of utility services and depletion of oil heating supplies. Environmental impacts often include damage to shrubbery and trees due to heavy snow loading, ice build-up and/or high winds, which can break limbs or even bring down large trees.

Gradual melting of snow and ice provides excellent groundwater recharge. However, high temperatures following a heavy snowfall can cause rapid surface water runoff and severe flooding.

The potential impacts of winter storms on community lifelines are as follows:

Table 4.3.9.2-1: Most Likely Lifelines Impacted by Winter Storm	
LIFELINES	NOTES
 Safety and Security	Government administrative services may be impacted through transportation infrastructure issues and community safety may be threatened due to potential harm from storm impacts.
 Food, Hydration, Shelter	Winter storms can cause damage to structures and water utility infrastructure, while the food supply chain may be disrupted due to impacts on transportation infrastructure.
 Energy (Power & Fuel)	Potential direct damage to infrastructure and then potential increased fuel use for those who lost access to electrical heating may occur.
 Transportation	Transportation lifeline in response and recovery due to direct damage to infrastructure and dangerous road conditions.

4.3.9.3. Past Occurrence

The Commonwealth of Pennsylvania have a long history of severe winter weather. The worst winter storm on record occurred on March 12-13, 1993. This blizzard, often called "the Storm of the Century," stretched from Canada to the Gulf of Mexico but was worst in the Eastern United States, including all of Pennsylvania. This storm caused widespread blackout conditions; snowfall totals ranged from twelve inches in Philadelphia to 20 inches in Harrisburg and Scranton to 24 inches in the Pittsburgh area. This event garnered a Presidential Emergency Declaration; the overall damage estimate for all states in this event was \$6.6 billion. This event was the third- largest snowstorm on record for the Pittsburgh weather station with a snowfall of 25.3 inches.

In the winter of 1993-1994, the state was hit by a series of protracted winter storms. The severity and nature of these storms combined with accompanying record-breaking frigid temperatures posed a major threat to the lives, safety and well-being of Commonwealth residents and caused major disruptions to the activities of schools, businesses, hospitals and nursing homes.

One of these devastating winter storms occurred in early January 1994 with record snowfall depths in many areas of the Commonwealth, strong winds, and sleet/freezing rains. Numerous storm-related power outages were reported and as many as 600,000 residents were without electricity, in some cases for several days at a time. A ravaging ice storm followed which closed major arterial roads and downed trees and power lines. Utility crews from a five-state area were called to assist in power restoration repairs. Officials from PPL Corporation stated that this was the worst winter storm in the history of the company; related damage-repair costs exceeded \$5,000,000.

Venango County averages 50 inches of snow annually. In addition to the events described above, other winter storm events from 1996 to 2024 are listed in Table 4.3.9.3-1.

Table 4.3.9.3-1: Winter Storm Events from 1996 to 2024		
Date	Type	Property Damage (\$)
01/02/1996	Heavy Snow	0.00K
03/07/1996	Heavy Snow	0.00K
01/09/1997	Winter Storm	0.00K
01/16/1997	Heavy Snow	0.00K
01/27/1997	Heavy Snow	0.00K
03/14/1997	Ice Storm	5.00K
11/13/1997	Ice Storm	2.00K
12/17/1998	Heavy Snow	0.00K
01/02/1999	Winter Storm	0.00K
01/08/1999	Winter Storm	0.00K
01/13/1999	Winter Storm	0.00K
03/06/1999	Heavy Snow	0.00K
02/17/2000	Winter Storm	0.00K
11/22/2000	Heavy Snow	0.00K
12/13/2000	Winter Storm	0.00K
12/25/2002	Heavy Snow	0.00K
04/07/2003	Ice Storm	0.00K
12/06/2003	Heavy Snow	0.00K
12/20/2003	Heavy Snow	0.00K
01/14/2004	Heavy Snow	0.00K
01/28/2004	Heavy Snow	0.00K
02/03/2004	Winter Storm	0.00K
02/06/2004	Ice Storm	0.00K
03/16/2004	Heavy Snow	0.00K

Table 4.3.9.3-1: Winter Storm Events from 1996 to 2024

Date	Type	Property Damage (\$)
12/14/2004	Heavy Snow	0.00K
01/05/2005	Ice Storm	30.00K
01/11/2005	Ice Storm	5.00K
01/22/2005	Heavy Snow	0.00K
03/01/2005	Heavy Snow	0.00K
04/03/2005	Heavy Snow	10.00K
12/15/2005	Ice Storm	0.00K
02/13/2007	Heavy Snow	0.00K
03/16/2007	Heavy Snow	0.00K
12/13/2007	Ice Storm	0.00K
12/15/2007	Heavy Snow	0.00K
01/01/2008	Heavy Snow	0.00K
02/01/2008	Winter Storm	10.00K
02/12/2008	Winter Storm	0.00K
10/28/2008	Winter Weather	0.00K
11/20/2008	Heavy Snow	0.00K
01/06/2009	Winter Storm	0.00K
01/09/2009	Heavy Snow	0.00K
01/17/2009	Heavy Snow	0.00K
01/27/2009	Winter Storm	0.00K
12/13/2009	Winter Weather	0.00K
12/25/2009	Ice Storm	0.00K
02/05/2010	Heavy Snow	0.00K
02/09/2010	Winter Storm	0.00K
12/05/2010	Heavy Snow	0.00K
01/31/2011	Heavy Snow	0.00K
02/01/2011	Heavy Snow	0.00K
02/20/2011	Heavy Snow	0.00K
02/25/2011	Heavy Snow	0.00K
03/10/2011	Heavy Snow	0.00K
01/02/2012	Heavy Snow	0.00K
02/25/2012	Winter Weather	0.00K
12/26/2012	Heavy Snow	0.00K
01/28/2013	Ice Storm	0.00K
11/23/2013	Heavy Snow	75.00K

Table 4.3.9.3-1: Winter Storm Events from 1996 to 2024

Date	Type	Property Damage (\$)
11/26/2013	Heavy Snow	0.00K
01/05/2014	Extreme Cold/wind Chill	0.00K
02/04/2014	Winter Storm	0.00K
11/22/2014	Winter Weather	0.00K
11/27/2014	Winter Weather	0.00K
12/02/2014	Winter Weather	0.00K
01/07/2015	Lake-effect Snow	0.00K
02/14/2015	Extreme Cold/wind Chill	0.00K
02/19/2015	Extreme Cold/wind Chill	0.00K
02/24/2015	Extreme Cold/wind Chill	0.00K
02/15/2016	Heavy Snow	0.00K
04/02/2016	Winter Weather	0.00K
04/08/2016	Winter Weather	0.00K
11/20/2016	Lake-effect Snow	0.00K
12/09/2016	Winter Weather	0.00K
12/11/2016	Winter Weather	0.00K
12/29/2016	Winter Weather	0.00K
12/12/2017	Lake-effect Snow	0.00K
01/12/2018	Winter Storm	0.00K
02/07/2018	Winter Weather	0.00K
03/08/2018	Winter Weather	0.00K
11/14/2018	Winter Weather	0.00K
01/18/2019	Winter Storm	0.00K
01/30/2019	Extreme Cold/wind Chill	0.00K
02/10/2019	Winter Weather	0.00K
02/20/2019	Winter Weather	0.00K
12/01/2019	Winter Weather	0.00K
12/04/2019	Winter Weather	0.00K
02/07/2020	Winter Weather	0.00K
02/12/2020	Winter Weather	0.00K
02/27/2020	Winter Weather	0.00K
04/17/2020	Winter Weather	0.00K
11/01/2020	Winter Storm	0.00K
12/01/2020	Winter Storm	0.00K
12/16/2020	Winter Weather	0.00K

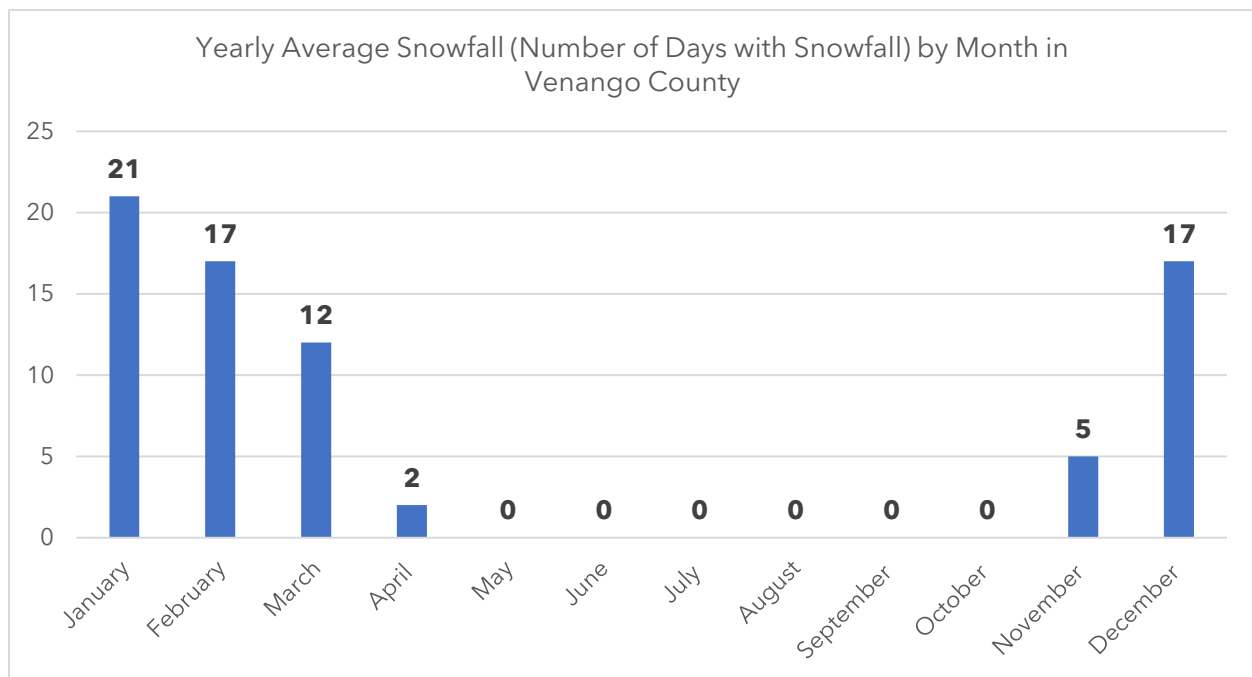
Table 4.3.9.3-1: Winter Storm Events from 1996 to 2024

Date	Type	Property Damage (\$)
12/24/2020	Winter Weather	0.00K
01/20/2021	Winter Weather	0.00K
01/25/2021	Winter Weather	0.00K
02/01/2021	Winter Weather	0.00K
02/08/2021	Winter Weather	0.00K
02/10/2021	Winter Weather	0.00K
02/13/2021	Winter Weather	0.00K
02/15/2021	Winter Weather	0.00K
11/14/2021	Winter Weather	0.00K
11/27/2021	Winter Weather	0.00K
01/09/2022	Winter Weather	0.00K
01/16/2022	Winter Storm	0.00K
01/23/2022	Winter Weather	0.00K
01/24/2022	Winter Weather	0.00K
02/03/2022	Winter Storm	0.00K
02/24/2022	Winter Weather	0.00K
03/09/2022	Winter Weather	0.00K
03/11/2022	Winter Weather	0.00K
04/18/2022	Winter Weather	0.00K
12/15/2022	Winter Weather	0.00K
12/23/2022	Winter Weather	0.00K
01/22/2023	Winter Weather	0.00K
01/26/2023	Winter Weather	0.00K
02/22/2023	Winter Weather	0.00K
03/06/2023	Winter Weather	0.00K
03/13/2023	Winter Weather	0.00K
11/01/2023	Winter Weather	0.00K
12/18/2023	Winter Weather	0.00K
01/15/2024	Winter Weather	0.00K
01/18/2024	Winter Weather	0.00K
01/18/2024	Winter Weather	0.00K
02/16/2024	Winter Weather	0.00K
03/10/2024	Winter Weather	0.00K
Total		50.0k

4.3.9.4. Future Occurrence

Winter storms are a regular, annual occurrence in Pennsylvania and should be considered highly likely. Data from Weather Trends in chart 4.3.9.4-1 below depicts the weather history for Venango County. This is a good indicator of what to look for in the future for average snowfall days.

Figure 4.3.9.4-1: Yearly Average Snowfall in Venango County



Changing weather patterns have made certain types of disasters more frequent and extreme. Precipitation levels are expected to rise in Venango County by more than two times by 2050 (Climate Central, 2019). Further, the number of very cold days annually is increasing each year. Cold temperatures combined with increased precipitation creates conditions conducive for winter weather. As these external conditions continue to change, they may impact the occurrence level of winter storms in the County. The probability of future winter storms can be considered highly likely according to the Risk Factor Methodology (see Table 4.4.1-1).

4.3.9.5. Vulnerability Assessment

Based on the information available, communities in the north of Venango County are more vulnerable to the direct impacts of winter storms. Snowfall is expected and normal in wintertime. Extreme snow is the most potentially disruptive to the public. Ice, cold temperatures, and high winds are also common and can be very dangerous. Severe winter storms could potentially produce an accumulation of snow and ice on roofs, trees

and utility lines resulting in roof collapse, loss of electricity and blocked transportation routes. In addition, the more rural areas of the County are susceptible to isolation caused by winter storms. Areas that are heavily wooded can make emergency response to these areas difficult when roadways are blocked by downed trees and wires, which poses an immediate threat to human life.

Vulnerability to the effects of winter storms on buildings is somewhat dependent on the age of a building because as building codes become more stringent, buildings can support heavier loads and as buildings age, various factors may deteriorate their structural integrity. Vulnerability also depends upon the type of construction and the degree to which a structure has been maintained.

Critical facilities would be impacted by a storm event, but these structures are largely constructed of concrete and masonry; therefore, they should only suffer minimal structural damage. Because power interruption can occur, backup power is recommended for critical facilities and infrastructure.

The most vulnerable structures are those that were poorly built or are dilapidated. The weight of heavy snow or ice may lead to structural collapse or to minor damage. Some shed roofs that protect township and borough road maintenance or firefighting equipment have large span roofs that may collapse under the weight of especially heavy snow or ice although none have collapsed due to recent heavy snow or ice storms.

All structures and infrastructure in Venango County are exposed to heavy snow and ice. For this analysis, structures built prior to 1940 are identified as being potentially at risk of being somewhat weakened and more susceptible to damage due to heavy snow or ice. Table 4.3.9.5-1 shows the number of housing units in Venango County built prior to 1940 according to the ACS 2022 five-year estimates. The City of Oil City has the most structures of any municipality in the county built prior to 1940 (over 2,000). While the U.S. Census Bureau provides estimates for residential structures, the age of non-residential structures is not available.

Table 4.3.9.5-1: Housing Units Built Prior to 1940 in Venango County	
Municipality	Number of Housing Units
Allegheny Township	14
Barkeyville Borough	30
Canal Township	71
Cherrytree Township	79
Clinton Township	54
Clintonville Borough	61
Cooperstown Borough	35
Cornplanter Township	254
Cranberry Township	447

Table 4.3.9.5-1: Housing Units Built Prior to 1940 in Venango County	
Municipality	Number of Housing Units
Emlenton Borough	128
Franklin City, City of	1,309
Frenchcreek Township	82
Irwin Township	100
Jackson Township	32
Mineral Township	27
Oakland Township	108
Oil City, City of	2,353
Oil Creek Township	39
Pinegrove Township	145
Pleasantville Borough	122
Plum Township	92
Polk Borough	94
President Township	32
Richland Township	110
Rockland Township	132
Rouseville Borough	83
Sandycreek Township	141
Scrubgrass Township	60
Sugarcreek Borough	854
Utica Borough	18
Victory Township	28
Total	7,134
Source: U.S. Census Bureau, 2018-2022	

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will have no effect on the winter storm vulnerability of the current communities in Venango County.

4.3.9.6. Equity in Vulnerable Communities

During winter storms there will be a disproportionate impact on low-income and marginalized communities. Low-income families are more likely to live in poorly insulated or older homes that are less able to withstand extreme cold. These homes may lack sufficient heating, insulation, and weatherproofing, making them more vulnerable to damage from ice, snow, and cold temperatures. Many low-income households also experience energy insecurity and may struggle to afford heating

during winter months. Energy shutoffs due to unpaid bills can leave them dangerously exposed to cold weather. Elderly households or households with people with disabilities may also face additional challenges due to mobility issues. Icy conditions, snow buildup, and impassable roads or sidewalks can prevent them from leaving their homes.

4.3.10. Hurricane, Tropical Storm, and Nor'easter

4.3.10.1. Location and Extent

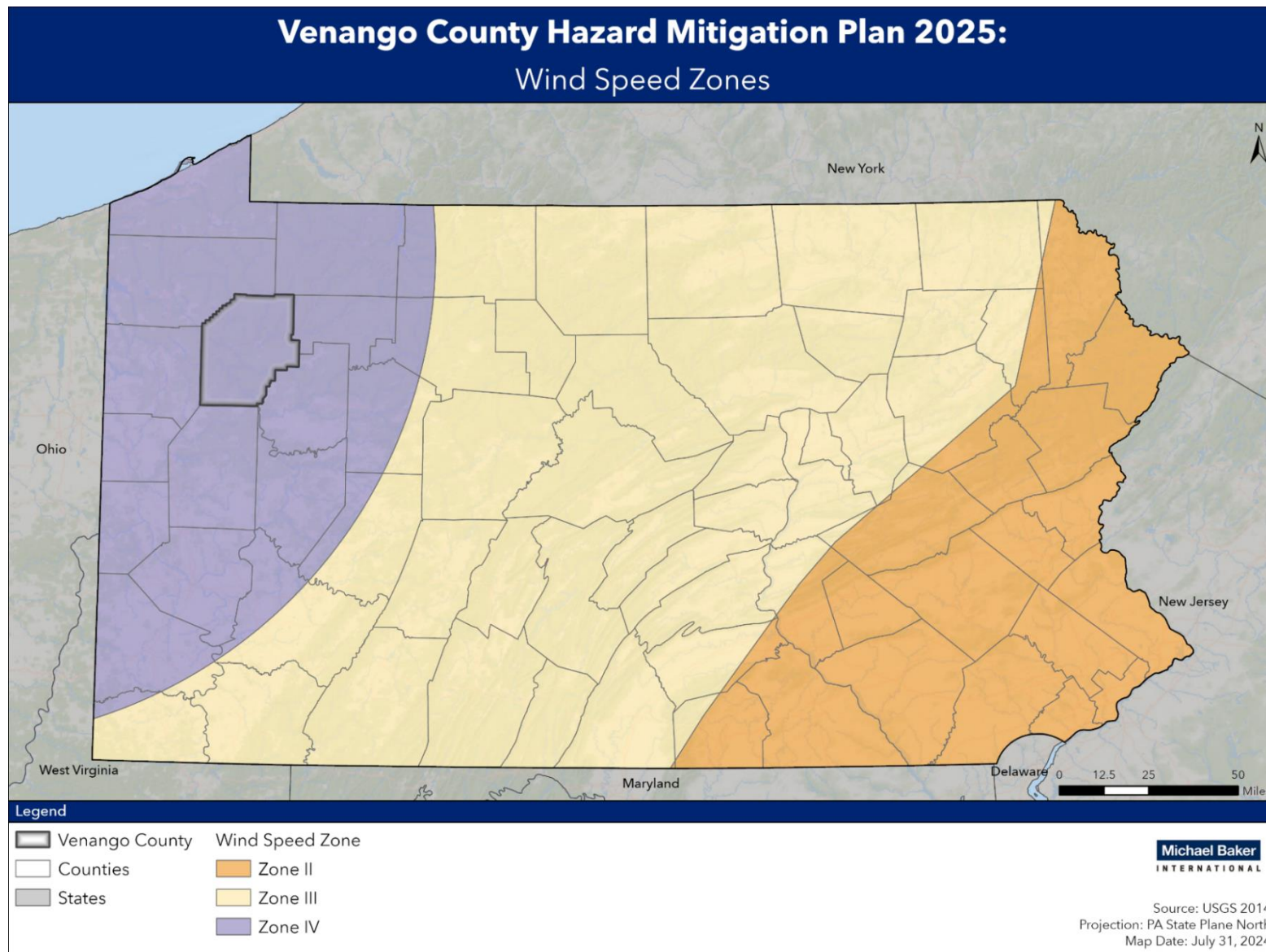
Pennsylvania does not have any open-ocean coastline. However, the impacts of coastal storm systems such as hurricanes, tropical storms, and nor'easters can extend well inland. While it is unlikely that a tropical storm would directly impact Venango County, secondary impacts from these storm events such as strong winds, flooding, and winter storms may be experienced throughout the county. Tropical storms that could potentially impact Venango County develop in tropical or sub-tropical waters found in the Atlantic Ocean, Gulf of Mexico, or Caribbean Sea. Nor'easters are extra-tropical storms which typically develop from low-pressure centers off the Atlantic Coast north of North Carolina during the winter months. Extra-tropical is a term used to describe a hurricane or tropical storm that's cyclone has lost its 'tropical' characteristics. While an extra-tropical storm donates a change in weather pattern and the way a storm gathers energy, it may still have winds that are tropical storm or hurricane force.



Venango County is located more than 200 hundred miles from open coastline, but tropical storms can track inland causing heavy rainfall and strong winds. These storms are regional events that can impact very large areas hundreds to thousands of miles across over the life of a storm. Therefore, all communities within Venango County are equally subject to the secondary impacts of hurricanes, tropical storms, and nor'easters. However, areas within the county that are already at risk for flooding, wind, and winter storm damage are particularly vulnerable.

Figure 4.3.5.1 shows wind speed zones developed by the American Society of Civil Engineers in 2012 based on information including 40 years of tornado history and over 100 years of hurricane history. This is the most recent data available. It identifies wind speeds that could occur across the United States to be used as the basis for design and evaluation of the structural integrity of shelters and critical facilities. Venango County falls within Zone IV, meaning that design wind speeds for shelters and critical facilities should be able to withstand a 3-second gust of up to 250 mph. Venango County is outside of the Hurricane Susceptible Region for wind consideration. More detail on tornados and windstorms is discussed in [Section 4.3.7](#).

Figure 4.3.10.1-1: Wind Speed Zone



4.3.10.2. Range of Magnitude

The impacts associated with hurricanes and tropical storms are primarily wind damage and flooding. It is not uncommon for tornadoes to develop during these events. Historical tropical storm and hurricane events have brought intense rainfall, sometimes leading to damaging floods, northeast winds, which, combined with waterlogged soils, caused trees and utility poles to fall.

The impact tropical storm or hurricane events have on an area is typically measured in terms of wind speed. Expected damage from hurricane force winds is measured using the Saffir-Simpson Scale. The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds, barometric pressure and storm surge potential (characteristic of tropical storms and hurricanes, but not a threat to Venango County), which are combined to estimate potential damage. Table 4.3.5-1 lists Saffir-Simpson Scale categories with associated wind speeds and expected damages. Categories 3, 4 and 5 are classified as “major” hurricanes. While major hurricanes comprise only 20 percent of all tropical cyclones making landfall, they account for over 70 percent of the damage in the United States.

Table 4.3.10.2-1: Saffir-Simpson Scale Categories with Associated Wind Speeds and Damages (NHC, 2021)

STORM CATEGORY	WIND SPEED (mph)	DESCRIPTION OF DAMAGES
1	74-95	MINIMAL: Damage is limited primarily to shrubbery and trees, unanchored mobile homes and signs. Damage to power lines may cause multi-day outages. No significant structural damage.
2	96-110	MODERATE: Some trees are toppled, some roof coverings are damaged, and major damage occurs to mobile homes. Some roofing material, door and window damage. Power outages expected for multiple days or weeks.
3	111-129	EXTENSIVE: Some structural damage to small residences and utility buildings, with a minor amount of curtain wall failures. Mobile homes are destroyed. Large trees are toppled. Terrain may be flooded well inland. Water and electricity sources are likely to be compromised for days or weeks.
4	130-156	EXTREME: Extensive damage to roofs, windows, and doors; roof systems on small buildings completely fail. More extensive curtain wall failures. Terrain may be flooded well inland.
5	>157	CATASTROPHIC: Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Massive evacuation of residential areas may be required.

The likelihood of these damages occurring in Venango County is assessed in [Section 4.3.10.4](#). It is important to recognize the potential for flooding during hurricane, tropical storm, and Nor'easter events; the risk assessment for these events is included [Section 4.3.10.5](#). Environmental impacts associated with hurricanes and tropical storms are consistent with the impacts described for flooding in [Section 4.3.3](#) and tornadoes and windstorms in [Section 4.3.7.2](#). The impact of severe winter weather which sometimes occurs during Nor'easter events is discussed in [Section 4.3.9.2](#).

The potential impacts of hurricanes, tropical storms, or a Nor'easter on community lifelines are as follows:

Table 4.3.10.2-1: Most Likely Lifelines Impacted by Hurricanes, Tropical Storms, or Nor'easter	
LIFELINES	NOTES
 Safety and Security	Government operations and facilities, including police, fire, and search and rescue are needed for response and recovery.
 Food, Hydration, Shelter	Severe storms present a significant risk to buildings and infrastructure and can create issues for food and water access.
 Energy (Power & Fuel)	The power grid and issues of fuel availability either due to direct damage or increased usage may occur.
 Transportation	Transportation corridors may be affected due to direct damage from storm conditions, and potential impacts of other compounding hazards such as flooding and transportation incidents.
 Hazardous Materials	Damage to facilities and other storage areas from storm or flooding damage may affect hazardous materials.

4.3.10.3. Past Occurrence

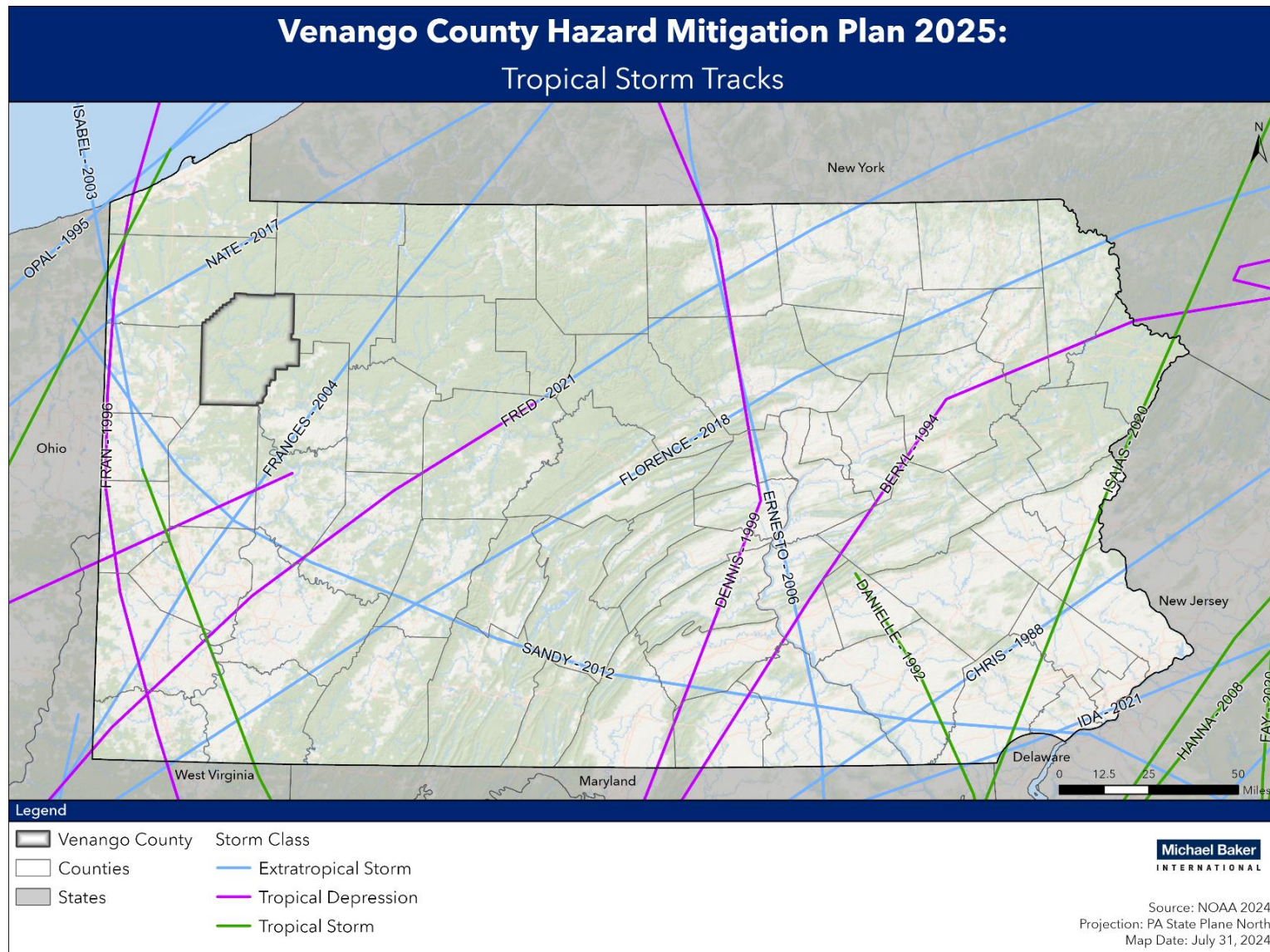
Table 4.3.10.3-2 shows the federally declared tropical storms or hurricanes that affected Venango County. While no tropical storms have directly passed through Venango County, the wind and rain from nearby storm events have had secondary impacts on the county. Two Emergency Declarations for hurricanes have affected Venango County since 1955: Hurricane Sandy in 2012 and Hurricane Katrina in 2005. Both Emergency Declarations were declared for the entire state of Pennsylvania.

Table 4.3.10.3-2: Previous Federal Disaster Declarations Affecting Venango County (FEMA, 2024)

YEAR	EVENT
2004	Tropical Depression Ivan
2005	Hurricane Katrina
2012	Hurricane Sandy

Past occurrences of potential secondary impacts of hurricanes, tropical storms, and nor'easters, such as flooding and tornados, are discussed in [Section 4.3.3](#) and [4.3.7](#) respectively. In summary, nearly 100 flood events have occurred in Venango County since 1883, some of which have caused loss of life and millions of dollars in damage. Additionally, Venango County's history of tornados, strong winds, and windstorms has included 210 events, which have caused a total of nine deaths, 48 injuries, and over \$50 million in damage.

Figure 4.3.10.3-1: Venango County Tropical Storm Tracks



4.3.10.4. Future Occurrence

According to the National Oceanic and Atmospheric Administration Hurricane Research Division, there is less than a six-percent chance of a tropical storm or hurricane event occurring between June and November of any given year in western Pennsylvania. Additionally, a tropical storm has yet to have a direct impact on Venango County. Therefore, the probability of future hurricane events having a direct impact on the county can be considered unlikely according to the Risk Factor Methodology (see Table 4.4.1-1). However, flooding and tornados will likely continue to affect Venango County in the future, both as independent events as well as secondary impacts of hurricanes, tropical storms, and nor'easters.

4.3.10.5. Vulnerability Assessment

A vulnerability assessment for hurricanes and tropical storms focuses on the impacts of flooding and severe wind. Therefore, the assessment for flood-related vulnerability is addressed in [Section 4.3.3](#) and vulnerability to wind damage is addressed in [Section 4.3.7](#). Venango County may also be vulnerable to severe winter weather impacts caused by nor'easters, which is evaluated in [Section 4.3.9](#).

Climate change has led to an increase in the intensity of hurricanes due to warmer ocean temperatures and shifting atmospheric patterns. While Venango is inland and not directly impacted by hurricanes, the region still experiences secondary effects such as heavy rainfall, flooding, and strong winds from these tropical storms. This extreme weather can affect the vulnerable communities such as low-income communities (see Chart 2.3-2 Venango County Mean Household Income, by Municipality) or aged housing units (see Table 4.3.2.5 Age of Housing Structures in Venango County, by Municipality) because it can cause damage to utility lines, disrupt transportation, and lead to power outages. Additionally, increased precipitation from hurricanes can contribute to flooding along the Allegheny river, posing threats to homes and businesses.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will have no effect on hurricane, tropical storm, and nor'easter vulnerability of the current communities in Venango County.

4.3.10.6. Equity in Vulnerable Communities

Regarding equity, residents living within mobile homes or other manufactured homes will experience risks associated with severe storms at a disproportionate rate compared to other housing types due to their susceptibility to high winds and floods. Households with no vehicles, lack of internet access, and/or no access to smartphones may have

extra hurdles if evacuation is needed in the face of this hazard. Populations of people experiencing homelessness will require extra help finding locations to shelter in place.

HUMAN-MADE HAZARDS

4.3.11. Civil Disturbance

4.3.11.1. Location and Extent

Civil disturbance is a broad term that is typically used by law enforcement to describe one or more forms of disturbance caused by a group of people. Civil disturbances are typically a symptom of, and a form of protest against, major socio-political problems. Civil disturbance hazards include the following:



- **Famine:** Involving a widespread scarcity of food leading to malnutrition, increased mortality, and a period of psychosocial instability associated with the scarcity of food, such as riots, theft of food, and the falls of governments caused by political instability borne of an inability to deal with the crisis caused by famine (IPC, 2024).
- **Economic Collapse, Recession:** Very slow or negative growth (The Economist, 2009).
- **Misinformation:** Erroneous information spread unintentionally (Makkai, 1970).
- **Civil Disturbance, Public Unrest, Mass Hysteria, Riot:** Group acts of violence against property and individuals, for example (18 U.S.C. § 232, 2008).
- **Strike, Labor Dispute:** Controversies related to the terms and conditions of employment, for example (29 U.S.C. § 113, 2008).

Typically, the severity of the action coincides with the level of public outrage. In addition to a form of protest major socio-political problems, civil disturbances can also arise out of union protest, institutional population uprising, or from large celebrations that become disorderly.

The scale and scope of civil disturbance events varies widely. However, government facilities, landmarks, prisons, and universities are common sites where crowds and mobs may gather. Several civil disorder events have been recorded in recent Venango County history.

4.3.11.2. Range of Magnitude

Civil disturbances can take the form of small gatherings or large groups blocking or impeding access to a building or disrupting normal activities by generating noise and intimidating people. They can range from a peaceful sit-in to a full-scale riot, in which a mob burns or otherwise destroys property and terrorizes individuals. Even in its more passive forms, a group that blocks roadways, sidewalks, or buildings interferes with public order. There are two types of large gatherings typically associated with civil

disturbances: a crowd and a mob. A crowd may be defined as a casual, temporary collection of people without a strong, cohesive relationship. Crowds can be classified into four categories (PEMA, 2023):

1. **Casual Crowd:** A casual crowd is a group of people who happen to be in the same place at the same time. Violent conduct does not occur.
2. **Cohesive Crowd:** A cohesive crowd consists of members who are involved in some type of unified behavior. Members of this group are involved in some type of common activity, such as worshipping, dancing, or watching a sporting event. They require substantial provocation to arouse to action.
3. **Expressive Crowd:** An expressive crowd is one held together by a common commitment or purpose. Although they may not be formally organized, they are assembled as an expression of common sentiment or frustration. Members wish to be seen as a formidable influence. One of the best examples of this type is a group assembled to protest for a cause.
4. **Aggressive Crowd:** An aggressive crowd is comprised of individuals who have assembled and are visibly angry or violent. This crowd often has leaders who attempt to arouse the members or motivate them to action. Members are noisy and threatening and will taunt authorities. They may be more impulsive and emotional and require only minimal stimulation to arouse violence.

A mob can be defined as a large disorderly crowd or throng. Mobs are usually emotional, loud, tumultuous, violent, and lawless. Similar to crowds, mobs have different levels of commitment and can be classified into four categories (Alvarez and Bachman, 2008):

- **Aggressive Mob:** An aggressive mob is one that attacks, riots and terrorizes. The object of violence may be a person, property, or both. An aggressive mob is distinguished from an aggressive crowd only by lawless activity. Examples of aggressive mobs are the inmate mobs in prisons and jails, mobs that act out their frustrations after political defeat, or violent mobs at political protests or rallies.
- **Escape Mob:** An escape mob is attempting to flee from something such as a fire, bomb, flood, or other catastrophe. Members of escape mobs are generally difficult to control can be characterized by unreasonable terror.
- **Acquisitive Mob:** An acquisitive mob is one motivated by a desire to acquire something. Riots caused by other factors often turn into looting sprees. This mob exploits a lack of control by authorities in safeguarding property.
- **Expressive Mob:** An expressive mob is one that expresses fervor or revelry following some sporting event, religious activity, or celebration. Members experience a release of pent up emotions in highly charged situations.

The worst-case scenario for Venango County would be an aggressive crowd or an expressive mob protesting on or within a major thoroughfare, most likely formed near

a major educational institution or headquarters. This scenario would also involve property damage comparable to or greater than that which occurred in the riots of 1998 and 2011, which are discussed in [Section 4.3.14.3](#).

The following community lifelines are at risk during a civil disturbance:

Table 4.3.11.2-1: Most Likely Lifelines Impacted by Civil Disturbance	
LIFELINES	NOTES
	Community safety may be at risk requiring police intervention.
	Medical personnel might be needed for response and recovery as participants may be injured, injure others, and demonstrations may impede emergency service operations.
	Community safety may be at risk requiring police intervention.

4.3.11.3. Past Occurrence

In April of 2015, four staff members were hurt in what state police called a riot at VisionQuest in Sandycreek Township. VisionQuest is a facility that houses troubled and at-risk youths, that has now since closed. It was reported that up to 50 individuals may have been involved in the fracas in which one staff member was hit with a rock or brick, another was grabbed by the neck and two were sprayed with a fire extinguisher. During the riot, a juvenile tried to escape but was apprehended in the woods after a brief chase by state troopers. A total of seven teens, all from Philadelphia, were charged or have charges pending that range from escape to aggravated assault and causing a riot.

In September of 2019, over 500 individuals gathered to rally at the Venango County Courthouse to support the residents and employees of the Polk State Center. The Polk Center has served those with intellectual disabilities for over 126 years. The gathering was coordinated by the AFSCME labor union and accompanied by area legislators and the Franklin and Venango Area Chambers of Commerce. The focus was on opposing the pending shutdown of the center. Rally participants included many Polk Center employees as well as family members of numerous residents of the facility. They gathered for what would be a very vocal and energetic hourlong event, and a table alongside the courthouse had a long line of supporters. The Polk Center eventually closed its doors in May of 2023.

The Black Lives Matter (BLM) movement, occurring in 2020, advocates against racial injustice and police brutality, calling for systemic change and equality for Black communities. In the City of Franklin, people gathered in support of BLM to raise awareness about racial issues and promote unity following the national protests sparked by the killing of George Floyd. This gathering was permitted by the city, it was a peaceful gathering with many attendees.

In July 2022, nearly 100 people gathered in downtown Franklin to protest the Supreme Court's ruling that overturned Roe v. Wade and stripped away women's protections for abortions. The peaceful protest was organized by the Planned Parenthood and Women's March organizations and was supported by the Oil Region Rising Indivisible group and the Venango County Democratic Party.

The impacts of civil disturbance events are contingent upon numerous factors including issues, politics, and method of response. Generally, the impact of civil disturbance events is nominal and short-lived unless acts of sabotage are performed. There may be minor injuries to first responders or participants from physical confrontations, and vandalism may cause minimal damage to property, facilities, and infrastructure. Adequate law enforcement at planned civil disturbance events and around likely target locations like the offices of state agencies minimizes the chances of a small assembly of individuals turning into a significant disturbance.

4.3.11.4. Future Occurrence

Civil disturbance is always a possibility as long as there is discrimination or other perceived social or economic injustices. However, it may be possible to recognize the potential for an event to occur in the near-term. For example, an upcoming significant sporting event at one of the colleges or universities in the Commonwealth or the City of Pittsburgh may result in gathering of large crowds or immediately after significant national news involving political or social debates. Local law enforcement should anticipate these types of events and be prepared to handle a crowd so that peaceful gatherings are prevented from turning into unruly public disturbances.

It is difficult to determine the influence that climate change will have on the risk of civil disturbance. It can be suggested that colder and hotter temperatures can lead to public unrest or strikes. Specifically if residents and employees do not have access to cooling or heating equipment within or outside of their homes, safe or comfortable modes of transportation. Climate change and weather can lead to negative economic growth and limited food production, possibly resulting in famine or economic collapse. The future occurrence of civil disturbance can be considered unlikely as defined by the Risk Factor methodology probability criteria (see Table 4.4-1).

4.3.11.5. Vulnerability Assessment

The vulnerability of individual jurisdictions is difficult to determine because civil disturbance hazards are tied to the current political and economic climate. A jurisdiction that is very vulnerable one month may be less vulnerable the next. However, in general, Venango County may have lower than average vulnerability in Pennsylvania due to lower concentrations of local, state, and federal facilities.

Jurisdictional losses for civil disturbance events are difficult to predict and can vary significantly in range. Sites previously identified in these sections are locations where such events are more likely to occur and therefore should be considered more vulnerable. Adequate law enforcement at these locations minimizes the changes of a small assembly of people turning into a significant disturbance. This will ensure improved response times, optimal communications, and containment of the event, as during these events major roadways can be blocked and disturb traffic and larger events may involve the interruption or removal of communication.

More broadly, in the case of large civil disturbance events, the County may incur losses related to work stoppages in addition to any acts of vandalism that may occur. Failure to pursue a program of civil disturbance awareness may result in increased loss of lives and property.

As described on the previous page, civil disturbances may occur at target locations like the offices of state agencies minimizes the chances of a small assembly of individuals turning into a significant disturbance. Table 2.6-1 Venango County Critical Facilities by Municipality and Type identifies the critical facilities in the County by municipality. The City of Uniontown is the only municipality with County buildings and more than one police station and prison. The City and South Union Township also have financial institutions, and all municipalities have one municipal facility. These facilities should be monitored and considered and evaluated for appropriate protection systems in future HMP updates.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could reduce vulnerability to civil disturbances by lowering the likelihood of large gatherings, protests, or conflicts that typically require a large population base.

4.3.11.6. Equity in Vulnerable Communities

In terms of equity, communities with less access to the internet and smartphones may have difficulties getting updates on the state of a civil disturbance. Similarly, communities with low English proficiency may require translations. Ensuring that evacuation plans and recovery services are accessible to everyone is critical.

4.3.12. Appendix G- Dam Failure

4.3.12.1. The Dam Failure profile can be found in [Appendix G](#).



4.3.13. Environmental Hazards – Hazardous Materials Release

4.3.13.1. Location and Extent

Hazardous material releases pose threats to the natural environment, the built environment, and public safety through the diffusion of harmful substances, materials, or products. Hazardous materials can include toxic chemicals, infectious substances, bio-hazardous waste, and any materials that are explosive, corrosive, flammable, or radioactive. Hazardous material releases can occur wherever hazardous materials are manufactured, used, stored, or transported. Such releases can occur along transportation routes or at fixed-site facilities. Hazardous material releases can result in human and wildlife injury, property damage, and contamination of air, water, and soils.



Fixed-site facilities that use, manufacture, or store hazardous materials in Venango County pose risk and must comply with both Title III of the federal Superfund Amendments and Reauthorization Act (SARA), also known as the Emergency Planning and Community Right-to-Know Act (EPCRA), and the Commonwealth's reporting requirements under the Hazardous Materials Emergency Planning and Response Act (1990-165), as amended. These legislations require that all owners or operators of facilities that manufacture, produce, use, import, export, store, supply, or distribute any extremely hazardous substance, as defined by the EPA, at or above the threshold planning quantity, as established by EPA, shall report to the county where the facility is located and to the Commonwealth that the facility is subject to the requirement to assist the Local Emergency Planning Committee (LEPC) in the development of an Off-site Emergency Response Plan. The community right-to-know reporting requirements keep communities abreast of the presence and release of chemicals at individual facilities. Information about the chemicals that are being manufactured or processed in facilities can be found in the U.S. Environmental Protection Agency's (USEPA) Toxic Release Inventory (TRI) database.

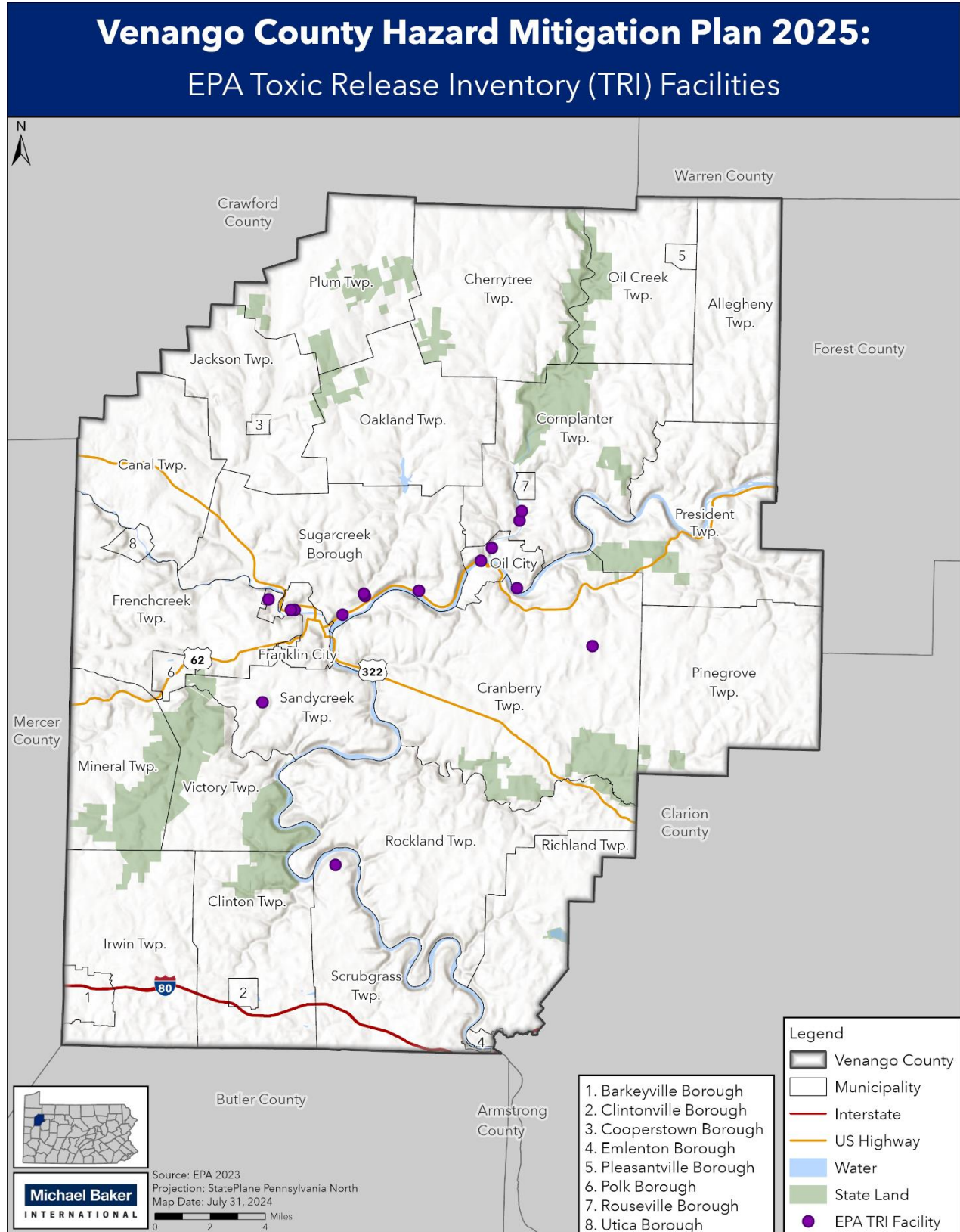
Facilities which employ ten or more full-time employees and which manufacture or process 25,000 pounds or more, or otherwise use 10,000 pounds or more, of any SARA Section 313-listed toxic chemical in the course of a calendar year are required to report TRI information to the EPA, the federal enforcement agency for SARA Title III, and PEMA. In 2023, there were 1,047 tracked facilities on EPA's TRI in Pennsylvania, 15 of which are located in Venango County as shown in Figure 4.3.19-1. This marks a decrease of 12 facilities since the last plan update (EPA, 2024b). The location of these sites is shown in Figure 4.3.13.1-1 and listed in Table 4.3.13.1-1.

Table 4.3.13.1-1: TRI Facilities in Venango County			
TRI Facility Name	Municipality	Releases (lb.)	Waste Managed (lb.)
SCRUBGRASS GENERATING PLANT	Scrubgrass	1,190,876.50	1,221,497.50
AM STABILIZERS CORP	Franklin	214,863.00	214,863.00
ELECTRALLOY	Oil City	51,261.21	73,563.28
WEBCO INDUSTRIES INC. OIL CITY TUBE DIV	Oil City	39,852.13	338,976.13
FRANKLIN INVESTMENT CORP.	Franklin	14,130.30	14,130.30
BORCHERS AMERICAS INC.	Franklin	5,970.30	39,363.30
SMS GROUP INC	Oil City	3,780.54	39,743.09
SASOL CHEMICALS (USA) LLC OIL CITY PLANT	Oil City	1,239.00	120,543.00
LATROBE SPECIALTY METALS - SANDY CREEK	Franklin	842	52,982.00
JOY GLOBAL UNDERGROUND MINING LLC	Franklin	520	18,801.00
SPECIALTY FABRICATION & POWDER COATING LLC	Franklin	500	12,057.00
SPECIALTY FABRICATION & POWDER COATING LLC	Oil City	500	9,677.00
WEBCO INDUSTRIES INC. - RENO DIV	Oil City	414	96,640.62
FRANKLIN BRONZE PRECISION COMPONENTS	Franklin	105.7	84,198.70
MATRIC LTD	Seneca	2.8	248.8

Venango County has several facilities that report to the EPA's TRI. Notably, the AM Stabilizers Corp., located on Two Mile Run Rd. in Franklin, reported 214,863 total pounds of on and off-site disposal or other releases. Another significant facility is the Scrubgrass Generating Plant, situated at 2151 Lisbon Rd in Kennerdell. This plant is involved in fossil fuel electric power generation. In the 2023 reporting year, the Scrubgrass Generating Plant reported 1,190,876 pounds of on-and-off-site disposal or other releases.

These facilities are integral to the County's industrial landscape, contributing to local employment and economic activity. However, their operations require ongoing environmental monitoring to manage and mitigate the release of hazardous materials, ensuring compliance with environmental regulations and the protection of public health.

Figure 4.3.13.1-1: EPA Toxic Release Inventory (TRI) Facilities



4.3.13.2. Range of Magnitude

Hazardous material releases can contaminate air, water, and soils, possibly resulting in death and/or injuries. Dispersion can take place rapidly when transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. When caused by natural hazards, these incidents are known as secondary events. Hazardous materials can include toxic chemicals, radioactive materials, infectious substances, and hazardous wastes. Such releases can affect nearby populations and contaminate critical or sensitive environmental areas.

With a hazardous material release, whether accidental or intentional, there are several potentially exacerbating or mitigating circumstances that will affect its severity or impact. Mitigating conditions are precautionary measures taken in advance to reduce the impact of a release on the surrounding environment. Primary and secondary containment or shielding by sheltering-in-place protects people and property from the harmful effects of a hazardous material release. Exacerbating conditions, characteristics that can enhance or magnify the effects of a hazardous material release include:

- **Weather conditions:** Affects how the hazard occurs and develops.
- **Micro-meteorological effects of buildings and terrain:** Alters dispersion of hazardous materials.
- **Non-compliance with applicable codes (e.g. building or fire codes) and maintenance failures (e.g. fire protection and containment features):** Can substantially increase the damage to the facility itself and to surrounding buildings.

The severity of the incident is dependent not only on the circumstances described above, but also with the type of material released and the distance and related response time for emergency response teams. The areas within closest proximity to the releases are generally at greatest risk, yet depending on the agent, a release can travel great distances or remain present in the environment for a long period of time (e.g. centuries to millennia for radioactive materials), resulting in extensive impacts on people and the environment.

A worst-case scenario event of a hazardous material release would be if a release occurred in one of the most populous jurisdictions, Cranberry Township; City of Franklin; Oil City; Sandycreek Township; or Sugarcreek Borough. A hazardous material release would likely cause the evacuation of residents ranging from 4,785 to 6,338 people plus visiting and working populations.

The environmental impacts of hazardous material releases include:

- Hydrologic effects – surface and groundwater contamination.

- Other effects on water quality such as changes in water temperature.
- Damage to streams, lakes, ponds, estuaries, and wetland ecosystems.
- Air quality effects – pollutants, smoke, and dust.
- Loss of quality in landscape.
- Reduced soil quality.
- Damage to plant communities – loss of biodiversity; damage to vegetation.
- Damage to animal species – animal fatalities; degradation of wildlife and aquatic habitat; pollution of drinking water for wildlife; loss of biodiversity; disease.

The potential impacts of hazardous materials release on community lifelines are as follows:

Table 4.3.13.2-1 Most Likely Lifelines Impacted by Hazardous Materials Release	
LIFELINES	NOTES
	Fire departments may be called into response and recovery if leaks or other issues result in explosions and fires.
	Impacts from hazardous materials releases include environmental contamination, which can impact agricultural operations and water supplies.
	Releases can have adverse impacts on communities, leading to more strain on the local healthcare system.
	Transportation lifeline as release itself or resulting explosions and fires.

4.3.13.3. Past Occurrence

Since the passage of SARA, Title III facilities which produce, use, or store hazardous chemicals must notify the public through the county emergency dispatch center and PEMA if an accidental release of a hazardous substance meets or exceeds a designated reportable quantity, and affects or has the potential to affect persons and/or the environment outside the plant. SARA Title III and Pennsylvania Act 165 also require a written follow-up report to PEMA and the County. These written follow-up reports include any known or anticipated health risks associated with the release and actions to be taken to mitigate potential future incidents. In addition, Section 204(a) (10) of Act 165 requires PEMA to staff and operate a 24-hour State Emergency Operations Center (SEOC) to provide effective emergency response coordination. The Pennsylvania's

Hazardous Material Emergency Planning and Response Act 990-165 - 2021 Annual Report is the latest report available. It states there were 1,643 hazardous materials/petroleum incidents in Pennsylvania and six of these events occurred in Venango County (PEMA, 2021). Additional incident information for years prior to 2021 may be obtained from annual reports submitted to PEMA.

The Pipeline and Hazardous Materials Safety Administration (PHMSA) develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.6-million-mile pipeline transportation system and the nearly 1 million daily shipments of hazardous materials by land, sea, and air. PHMSA produces a series of reports which provide statistics on incidents by type, year, geographical location, and other factors.

The Hazmat Incident Report Search Tool can be used to query data from the DOT Hazardous Materials Incident Report Form. The data can be shared with stakeholders about the size, frequency, and impacts of hazardous materials releases during transportation and used to improve the safe transportation of hazardous materials. Table 4.3.13.3-1 data is from the Hazmat Incident Report Search Tool. Below is the incident reports from the last 10 years.

Table 4.3.13.3-1: Venango County PHMSA Hazmat Incident Report			
INCIDENT ROUTE	INCIDENT CITY	DATE OF INCIDENT	INCIDENT RESULT
55 MAIN STREET	ROUSEVILLE	8/7/2014	Spillage
1715 Debence Drive	Franklin	10/1/2014	Spillage
1715 Debence Drive	FRANKLIN	7/9/2015	Spillage
110 Petroleum St	Oil City	11/29/2017	Spillage
259 QUAKER DRIVE	SENECA	5/3/2018	Spillage
1715 Debence Dr	FRANKLIN	10/24/2019	Spillage
1715 Debence Dr	FRANKLIN	3/18/2020	Spillage
1715 DeBence Dr	FRANKLIN	3/18/2020	Spillage
Old Route 8 Near Polk, PA	Polk	9/22/2021	Spillage
1715 DEBENCE DRIVE	FRANKLIN	4/5/2023	Spillage

Since 1978, there has been 41 reported hazardous materials release events in Venango County

Table 4.3.13.3-2: Hazardous Materials Release Events in Venango County (PHMSA, 2024)			
YEAR	EVENTS	YEAR	EVENTS
1978	1	2001	5
1979	2	2002	3
1980	2	2003	4

1981	1	2004	1
1982	1	2005	0
1983	1	2006	1
1984	1	2007	0
1985	0	2008	0
1986	0	2009	6
1987	3	2010	1
1988	1	2011	5
1989	0	2012	2
1990	1	2013	3
1991	3	2014	2
1992	0	2015	1
1993	0	2016	0
1994	7	2017	1
1995	5	2018	1
1996	1	2019	1
1997	3	2020	2
1998	4	2021	1
1999	2	2022	0
2000	2	2023	1
TOTAL		41	

4.3.13.4. Future Occurrence

While many hazardous material release incidents have occurred in Pennsylvania in the past, they are generally considered difficult to predict. An occurrence is largely dependent upon the accidental or intentional actions of a person or group. It is difficult to predict when and where environmental hazards related to gas pipelines will arise as they are often related to equipment failure and human error. Adequate monitoring through the DEP will reduce the likelihood of potential impacts to the community and to the environment. Overall, the probability of future environmental hazards events is likely as defined by the Risk Factor Methodology ([See Section 4.4-1](#)).

4.3.13.5. Vulnerability Assessment

Jurisdictions that are home to one or more hazardous materials facilities should be considered vulnerable to hazardous materials releases from fixed facilities. Structures, critical facilities, and populations located near hazardous material areas are also at risk. Table 4.3.18-5 shows the total number of structures in hazardous materials hazard areas defined as a 1.5-mile radius from any TRI facility. The table only includes municipalities

with structures that are vulnerable. Eleven of Venango County's municipalities have structures within hazardous materials hazard area. A number of municipalities populations are more at risk than others with higher percentages of structures within hazardous materials hazard areas including the City of Oil City (42.2%), City of Franklin (25.3%), and Cranberry Township (12.4%).

Table 4.3.13.5-1 shows the total number of critical facilities in hazardous materials areas by municipality. Note that the critical facility analysis for hazardous material hazard areas does not include TRI facilities classified as a critical facility as these sites are those that define the hazard area in this analysis. 12 of Venango County's municipalities have critical facilities within hazardous materials hazard area. A number of municipalities are more at risk than others with higher percentages of critical facilities within hazardous materials areas. There are 10,137 residential homes located in areas vulnerable to hazardous materials release. This represents the biggest portion of critical facilities in these areas. Schools (15) and congregate care (9) are the other highest concentration of critical facilities located in these areas. In the event of hazardous materials release, these facilities may be susceptible to water contamination.

Table 4.3.13.5-1: Population within 1.5 Miles of TRI Site by Municipality		
	Population from Subdivision Summary (2020)	Population with 1.5 miles of TRI Site
Allegheny Township	284	0
Barkeyville Borough	188	0
Canal Township	937	0
Cherrytree Township	1,308	0
Clinton Township	953	45
Clintonville Borough	439	0
Cooperstown Borough	399	0
Cornplanter Township	2,320	1,106
Cranberry Township	6,342	2,762
Emlenton Borough	611	0
Franklin City, City of	6,077	5,633
Frenchcreek Township	1,427	0
Irwin Township	1,253	0
Jackson Township	917	0
Mineral Township	498	0
Oakland Township	1,361	0
Oil City, City of	9,613	9,380
Oil Creek Township	753	0
Pinegrove Township	1,328	0
Pleasantville Borough	846	0
Plum Township	903	0
Polk Borough	634	0
President Township	448	0
Richland Township	777	0
Rockland Township	1,243	187
Rouseville Borough	457	286

Sandycreek Township	2,055	0
Scrubgrass Township	749	28
Sugarcreek Borough	4,775	2,802
Utica Borough	184	0
Victory Township	375	22
TOTAL	50,454	22,251

Table 4.3.13.5-2: Structures and Critical Facilities Vulnerable to Hazardous Materials Release, 2024

Municipality	Total CFs	CFs within 1.5 mile of TRI Site	PCT of CFs within 1.5 miles of TRI Site
Allegheny Township	1	0	0%
Barkeyville Borough	1	0	0%
Canal Township	3	0	0%
Cherrytree Township	5	0	0%
Clinton Township	4	0	0%
Clintonville Borough	2	0	0%
Cooperstown Borough	2	0	0%
Cornplanter Township	7	6	86%
Cranberry Township	18	0	0%
Emlenton Borough	4	0	0%
Franklin City, City of	33	24	73%
Frenchcreek Township	4	3	75%
Irwin Township	5	0	0%
Jackson Township	3	0	0%
Mineral Township	1	0	0%
Oakland Township	2	0	0%
Oil City, City of	18	18	100%
Oil Creek Township	1	0	0%
Pinegrove Township	5	0	0%
Pleasantville Borough	3	0	0%
Plum Township	1	0	0%
Polk Borough	6	0	0%
President Township	2	0	0%
Richland Township	3	0	0%
Rockland Township	5	2	40%
Rouseville Borough	1	1	100%
Sandycreek Township	6	4	67%
Scrubgrass Township	2	0	0%
Sugarcreek Borough	14	10	71%
Utica Borough	3	0	0%

Table 4.3.13.5-2: Structures and Critical Facilities Vulnerable to Hazardous Materials Release, 2024

Municipality	Total CFs	CFs within 1.5 mile of TRI Site	PCT of CFs within 1.5 miles of TRI Site
Victory Township	1	0	0%
Total	163	68	42%

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could reduce vulnerability to hazardous materials release by lowering industrial activity, traffic, and overall human interaction with hazardous substances. This in turn will decrease the likelihood of spills or accidents.

4.3.13.6. Equity in Vulnerable Communities

Marginalized communities, particularly low-income and minority populations, are often located near industrial facilities, waste sites, and transport routes for hazardous materials. These areas are more likely to experience spills, leaks, or accidents involving toxic substances making them more susceptible. Children, the elderly, and people with preexisting health conditions are particularly vulnerable to the effects of hazardous materials. Municipalities with high concentrations of these groups should plan accordingly.

4.3.14. Environmental Hazards - Conventional Oil & Gas

4.3.14.1. Location and Extent

Oil and gas development in Pennsylvania is extensive and has been ongoing for over 150 years, with the most recent phase of exploration and production activities targeting the Marcellus and Utica shales. Regulatory standards for the industry have evolved significantly as a function of both advances in technology and a more intense focus on environmental protection. More than 350,000 oil and gas wells have been drilled in Pennsylvania since the first commercial oil well was developed in 1859 (PA DEP-OOGM, 2010).

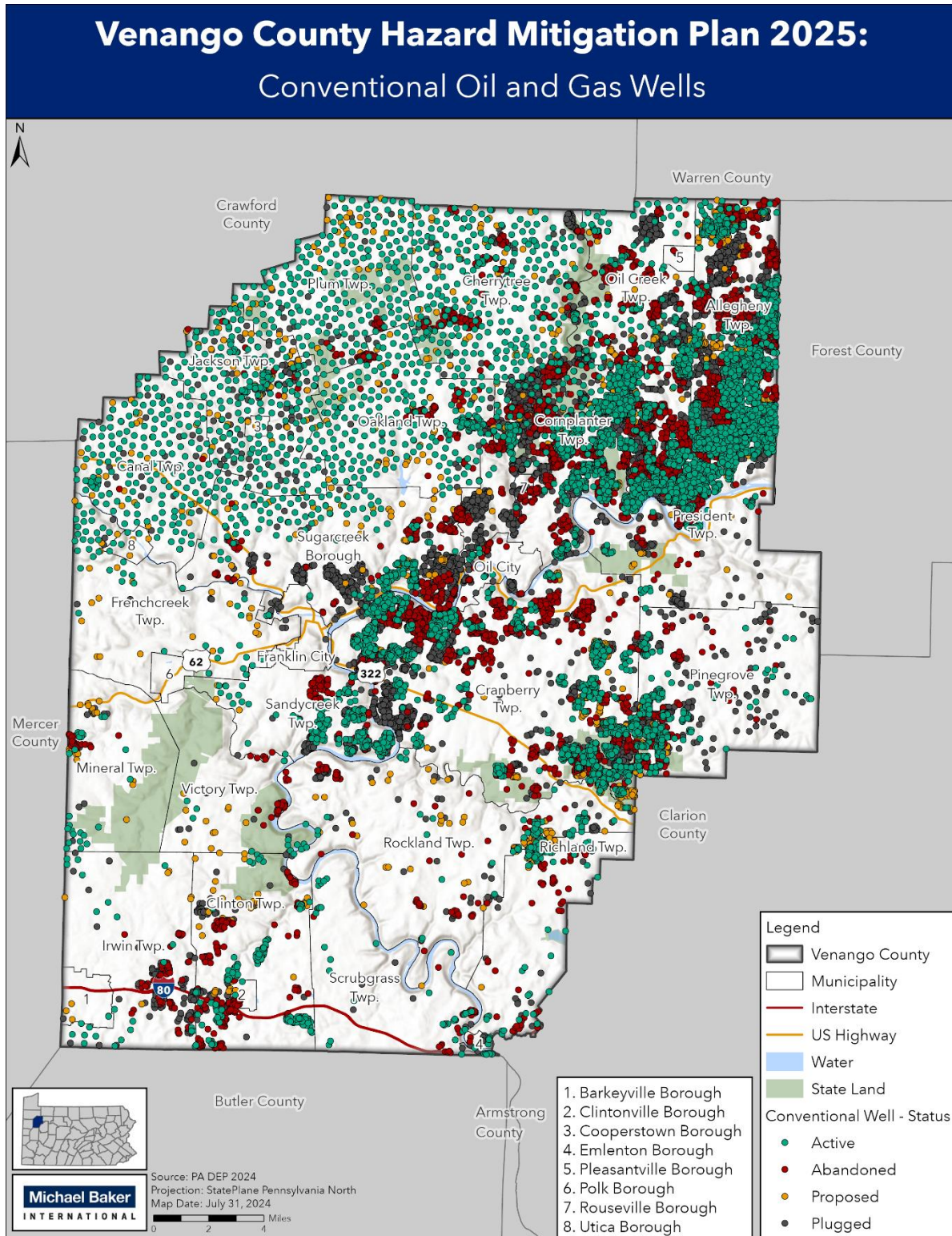


Additionally, oil and gas development had been taking place for nearly a century prior to permitting requirements enacted in 1955, an estimated 100,000 to 560,000 abandoned wells are yet to be accounted for in the state (PA DEP, 2020c). As of March 2024, 200 orphaned wells have been plugged with the help of grant funding as part of the Bipartisan Infrastructure Law (BIL) passed in 2021 (ECOS 2024). Efforts to plug abandoned wells are expected to continue with ongoing grant support. PA DEP differentiates between conventional and unconventional oil and gas wells. Conventional wells are traditional vertical wells, while unconventional wells are typically horizontally drilled wells commonly associated with the Marcellus Shale. Unconventional gas wells are profiled in [Section 4.3.15](#).

As seen In Figure 4.3.14-1, Venango County has conventional oil and gas wells across the county with the concentration in the north portion of the county. There are about 350 abandoned conventional oil and gas wells. There are about 6,400 active wells and 3,200 on the DEP abandoned list. Venango has about 1,000 plugged wells across the county and around 650 proposed conventional oil and gas wells.

Private water supplies such as domestic drinking water wells in the vicinity of oil and gas wells are at risk of contamination from brine and other pollutants including methane, which can pose a fire hazard.

Figure 4.3.14-1: Venango County Conventional Oil and Gas Wells Range of Magnitude



As is the case with all-natural resource extraction, a variety of potential hazards exist with oil and gas extraction. Abandoned oil and gas wells that are not properly plugged can contaminate groundwater and consequently domestic drinking water wells. Surface waters and soil are sometimes polluted by brine, a salty wastewater product of oil and gas well drilling, and from oil spills occurring at the drilling site or from a pipeline breach. This can spoil public drinking water supplies and be particularly detrimental to vegetation and aquatic animals.

Methane can leak into domestic drinking wells and pose fire and explosion hazards. In addition, natural gas well fires can occur when natural gas is ignited at the well site. Often, these fires erupt during drilling when a spark from machinery or equipment ignites the gas. The initial explosion and resulting flames have the potential to seriously injure or kill individuals in the immediate area. These fires are often difficult to extinguish due to the intensity of the flame and the abundant fuel source. When methane gas from unplugged gas wells seeps into underground coal mines, miners are at risk of asphyxiation and are subject to impacts of explosion.

Though injury and death have resulted from oil and gas well drilling and extraction, the majority of impacts from this human-made hazard are environmental in nature. Wells that are improperly drilled or plugged can contaminate groundwater resulting in water well contamination or eventually surface water contamination. Drilling additives stored on site can leak and contaminate soil, surface water, and groundwater. Oil leaks at the well site from oil pipelines contaminate soil and surface water and damage aquatic life and ecosystems.

The impacts of oil and natural gas wells range in magnitude and extent. There are several potential impacts, including those on water, land, and air. Common accidents involving gas well sites include “blowouts,” which are an explosion or failure of the rig, as well as the potential for chemical contamination. Beyond the purely environmental impacts of drilling, Venango County is likely to see significant indirect effects on its transportation infrastructure and land cover.

The potential impacts of conventional oil and gas wells on community lifelines are as follows:

Table 4.3.14.2-1: Most Likely Lifelines Impacted by Conventional Oil and Gas Wells	
LIFELINE	NOTES
	Community safety may be endangered, and fire departments may be called into response and recovery if leaks or other issues result in explosions and fires.
	Impacts from conventional wells include environmental contaminations, which can impact agricultural operations and water supplies.
	Potential environmental contamination can have adverse health impacts on communities, leading to more strain on the local healthcare system.

4.3.14.2. Past Occurrence

Pennsylvania has a long history of oil and gas well drilling and, though relatively infrequent, many accidents and incidents have occurred related to the extraction of these natural resources. No comprehensive list of oil and gas related incidents exists for the Commonwealth; however, State Impact reports on violations of active wells. PA DEP issued its 2022 Oil and Gas Annual Report showing that across the Commonwealth, there were 5,416 conventional oil and gas well violations reported as compared to 1,360 for unconventional wells. The number of violations has been increasing since 2019, in which there were 1,763 violations for conventional wells and 985 violations for unconventional wells. The DEP noted that it was not able to conduct as many inspections at active well sites as in previous years due to the COVID-19 pandemic. PA DEP also reported a reduction in well permit issuing times by more than 75 percent from 2017 to 2019 (PADEP-OOGM, 2019).

On August 16th, 2024, PADEP notified the sub-area on-scene coordinator (OSC) of a discharge of oil on the shoreline of the Allegheny River in Venango County, Pennsylvania. The sub-area OSC arrived at the location on August 16, 2024 at approximately 19:00 and met with personnel from the PADEP Emergency Response Program, the Sandycreek Fire Department, and the Venango County Emergency Management Agency. Initial responders had installed sorbent boom within the river, along the approximate 200 foot by 10 foot oil stained area of the shoreline. A rainbow sheen was visible contained within the sorbent. Initial responders had dug 3-4 small test pits (1-1.5 feet deep) within the stained area which were filling in with a oil/water mix. The mix appeared to be a weathered, dark oil, potentially crude.

A geophysical survey was performed in October to assist in determining a potential source of the oil discharge to the Allegheny River. The survey identified anomalies which may indicate a potential source of the discharge, these anomalies will be investigated further. EPA ERRS contractors continue to conduct maintenance activities at the site. To date ERRS contractors have recovered approximately 2,200 gallons of oil.

4.3.14.3. Future Occurrence

It is difficult to predict when and where environmental hazards will arise as they are often related to equipment failure and human error. Adequate monitoring through PA DEP will reduce the likelihood of potential impacts to the community and to the environment. Risk associated with oil and gas drilling is expected to remain moderate.

The number of permits issued for oil and gas wells decreases each year, though production continues to increase. Additionally, the number of orphaned and abandoned wells has increased. In PA DEP's 2019 Annual Report, they identified a study in partnership with DCNR in Cornplanter State Forest to measure methane leakage from identified orphan wells. This research will help PA DEP better estimate methane emissions from the thousands of orphaned and abandoned wells in Pennsylvania and determine how to quantify threats from abandoned wells.

Based on the short history of past occurrence, the probability of future conventional oil and gas well event is considered *possible* according to the Risk Factor Methodology (see Section 4.4-1).

4.3.14.4. Vulnerability Assessment

Structures and critical facilities located near conventional well hazard areas are also at risk. Table 4.3.14.4-1 shows total number of critical facilities that are vulnerable to conventional oil and gas wells. These are defined as the area within 1,000 yards of any conventional oil or gas well. Of the total 31 municipalities, 27 municipalities have a critical facility within .25 miles of a conventional oil and gas well. While the City of Franklin contains the highest number of structures located in conventional well hazard areas (19 critical facilities), 16 of the 31 municipalities have 100% of their critical facilities in a hazardous area.

Table 4.3.14.4-1: Critical Facilities Vulnerable to Conventional Oil and Gas Wells, 2024

Municipality	Number of CFs	CFs within .25 miles of Conventional Oil and Gas Well	% CFs within .25 miles of Conventional Oil and Gas Well
Allegheny Township	1	1	100%
Barkeyville Borough	1	0	0%
Canal Township	3	3	100%
Cherrytree Township	6	6	100%
Clinton Township	4	2	50%
Clintonville Borough	2	2	100%

Table 4.3.14.4-1: Critical Facilities Vulnerable to Conventional Oil and Gas Wells, 2024

Municipality	Number of CFs	CFs within .25 miles of Conventional Oil and Gas Well	% CFs within .25 miles of Conventional Oil and Gas Well
Cooperstown Borough	2	2	100%
Cornplanter Township	7	3	43%
Cranberry Township	14	12	86%
Emlenton Borough	4	4	100%
Franklin City, City of	33	19	58%
Frenchcreek Township	4	3	75%
Irwin Township	5	4	80%
Jackson Township	3	3	100%
Mineral Township	1	0	0%
Oakland Township	2	2	100%
Oil City, City of	18	15	83%
Oil Creek Township	1	1	100%
Pinegrove Township	5	4	80%
Pleasantville Borough	3	3	100%
Plum Township	1	1	100%
Polk Borough	6	0	0%
President Township	2	1	50%
Richland Township	3	3	100%
Rockland Township	5	5	100%
Rouseville Borough	1	1	100%
Sandycreek Township	6	1	17%
Scrubgrass Township	2	0	0%
Sugarcreek Borough	14	13	93%
Utica Borough	3	3	100%
Victory Township	1	1	100%
Total	163	118	73%

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could reduce vulnerability to conventional oil and gas wells in Venango County by lowering the demand for new drilling projects and reducing the number of people living near these wells, decreasing accident or exposure.

4.3.14.5. Equity in Vulnerable Communities

Equity considerations for conventional oil and gas wells focus on the disproportionate impacts these operations have on marginalized communities. Low-income, rural, and minority populations are often located closer to conventional oil and gas wells, exposing them to air and water contaminations, noise pollution, and the risk of accidents or spills. The most vulnerable communities include Scrubgrass Township, the City of Franklin, and the City of Oil City. These areas have the highest concentration of conventional oil and gas wells.

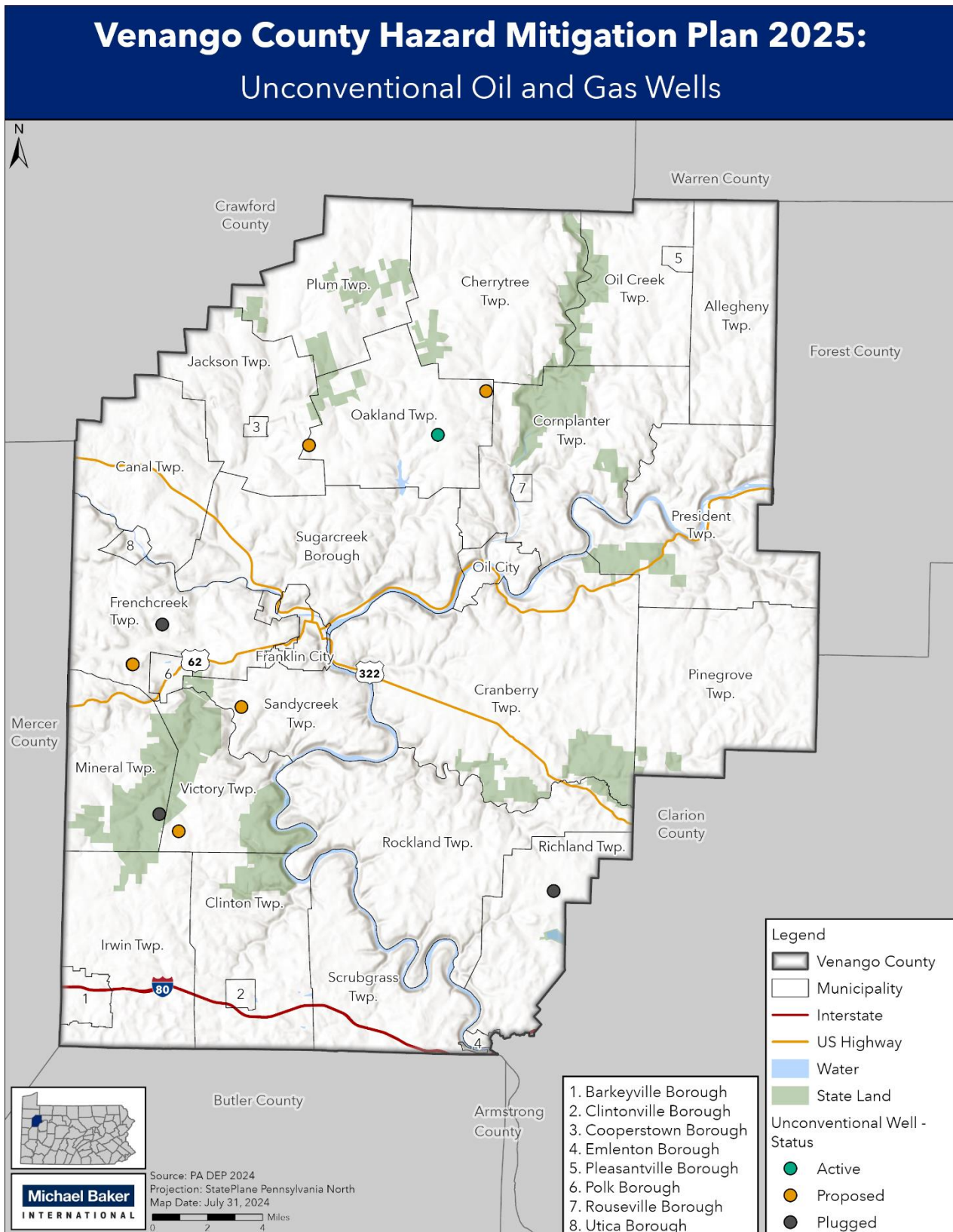
4.3.15. Environmental Hazards - Unconventional Oil & Gas

4.3.15.1. Location and Extent

PA DEP defines unconventional wells as wells drilled deep into shale rock formations found thousands of feet underground. These formations, mainly Marcellus Shale and Utica Shale, contain and produce natural gas. These wells use horizontal drilling techniques that use large quantities of high-pressured water, approximately one to eight million gallons, mixed with sand and other additives including hydrochloric and muriatic acid, to hydraulically fracture the rock. This practice is more commonly known as fracking. This type of extraction presents unique challenges for the County. There are nine unconventional wells in Venango County. There is one active unconventional well located in Oakland Township. There are three plugged and five proposed unconventional oil and gas wells. They are located all around Venango County, not concentrated in one area.



Figure 4.3.13.1-1: Venango County Unconventional Oil and Gas Wells



4.3.15.2. Range of Magnitude

There are some similarities in Range of Magnitude for both unconventional wells and conventional wells, though unconventional gas mining presents its own set of hazards as well.

The Marcellus Shale formation exists at a depth normally between 5,000 and 8,000 feet and holds trillions of cubic feet of natural gas. Extraction from this depth was previously not feasible but as drilling technology has improved over the years, recovering natural gas from Marcellus Shale is now possible (PADEP-OOGM, 2010). This extraction process is different from traditional natural gas extraction in that it often requires horizontal drilling. Horizontal drilling is accomplished by hydraulic fracturing, which involves pumping one to eight million gallons of water, mixed with sand and other additives including hydrochloric or muriatic acid, into the shale formation. The fluid or “frac fluid” that is recovered from this process must be properly treated as the water quality is very poor.

This extraction process is different from traditional natural gas extraction in that it often requires horizontal drilling. Horizontal drilling is accomplished by hydraulic fracturing which involves pumping one to eight million gallons of water, mixed with sand and other additives including hydrochloric or muriatic acid, into the shale formation. The fluid or “frac fluid” that is recovered from this process must be properly treated as the water quality is very poor.

Frac fluid is extremely saline and can be three to six times as salty as sea water. Other contaminants can include barium, bromine, lithium strontium, sulfate, ammonium, and very high concentrations of total dissolved solids (TDS). There is also some concern about normally occurring radioactive materials (NORMS) present in shale and potentially present in recovered drilling fluid, but there is very little data available on the radioactivity of frac fluid in Pennsylvania (Kirby, 2010).

Methods to desalinize liquid, including frac fluid, are being studied, with forward osmosis and ion concentration polarization among the most recently explored methods (Shahidul et al, 2019 and Choi et al, 2019). High levels of total dissolved solids (TDSs), though not harmful to humans, can be extremely harmful to aquatic life and can damage industrial equipment. Often, recovered frac fluid is stored in earthen impoundments and after treatment is taken to a sewage treatment facility. There is concern surrounding the toxic solid waste that remains after frac fluid is treated.

In addition to the traditional hazards associated with oil and gas well drilling, potential impacts from Marcellus Shale gas well drilling include:

- Surface water depletion from high consumptive use with low return rates affecting drinking water supplies, and aquatic ecosystems and organisms.

- Contaminated surface and groundwater resulting from hydraulic fracturing and the recovery of contaminated hydraulic fracturing fluid.
- Mishandling of solid toxic waste.
- Public health concerns.

The water used for hydraulic fracturing is composed of 87 chemicals, some of which have the potential to cause a danger to health of life (PADEP-OOGM, 2010). Beyond the purely environmental impacts of drilling, Venango County is likely to be see significant indirect effects on its transportation infrastructure and land cover.

The worst-case scenario for an oil or gas well incident would be if there was a discharge of pollutant material like frac fluid into the waterways of Venango County. This is particularly an issue in the southern and central portions of the county, where there are a higher number of reported domestic water wells and potentially, a greater amount of reliance on these wells for potable water supply.

The potential impacts of unconventional oil and gas wells on community lifelines are as follows:

Table 4.3.15.2-1: Most Likely Lifelines Impacted by Unconventional Oil and Gas Wells	
LIFELINES	NOTES
	Fire departments may be called into response and recovery if leaks or other issues result in explosions and fires.
	Impacts from unconventional wells include environmental contamination, which can impact agricultural operations and water supplies.
	Potential environmental contamination can have adverse health impacts on communities, leading to more strain on the local healthcare system.
	Issues with drilling operations may lead to additional challenges with energy production.

4.3.15.3. Past Occurrence

Pennsylvania has a long history of oil and gas well drilling and, though relatively infrequent, accidents and incidents have occurred related to the extraction of these natural resources. No comprehensive list of oil and gas related incidents exist for the

Commonwealth; however, major gas and oil well incidents in Pennsylvania are captured in PEMA’s incident management system, PEMA-KC. While access to this data is restricted, the PA HMP reported in 2023 that no gas and oil incidents were recorded between 2018 and 2023.

4.3.15.4. Future Occurrence

As is the case with conventional wells, it remains difficult to predict the number or frequency of unconventional well site incidents. It is difficult to predict when and where environmental hazards will arise as they are often related to equipment failure and human error. Adequate monitoring through the PA DEP will reduce the likelihood of potential impacts to the community and to the environment.

Overall, the probability of a future unconventional oil and gas well event is *possible* as defined by the Risk Factor Methodology (see Section 4.4-1).

4.3.15.5. Vulnerability Assessment

Structures and critical facilities located near unconventional well hazard areas are also at risk, which are defined as areas within 1,000 yards of any unconventional oil or gas well. Table 4.3.21-2 shows total number of structures in unconventional well hazard areas by municipality. One municipality has a critical facility located near an unconventional well, Oakland Township.

Table 4.3.15.5-1: Critical Facilities Vulnerable to Unconventional Oil and Gas Wells, 2024			
MUNICIPALITY	TOTAL CFs	CFs IN UNCONVENTIONAL WELL HAZARD AREA	PERCENT CFs IN UNCONVENTIONAL WELL HAZARD AREA
Oakland Twp.	2	1	50%

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could reduce vulnerability to unconventional oil and gas wells in Venango County by lowering the demand for new drilling projects and reducing the number of people living near these wells, decreasing potential water contamination and air pollution.

4.3.15.6. Equity in Vulnerable Communities

Equity considerations for unconventional oil and gas wells focus on the disproportionate impacts these operations have on marginalized communities. Low-income, rural, and minority populations are often located closer to unconventional oil and gas wells, exposing them to air and water contaminations, noise pollution, and the risk of accidents or spills.

4.3.16. Environmental Hazards - Coal Mining

4.3.16.1. Location and Extent

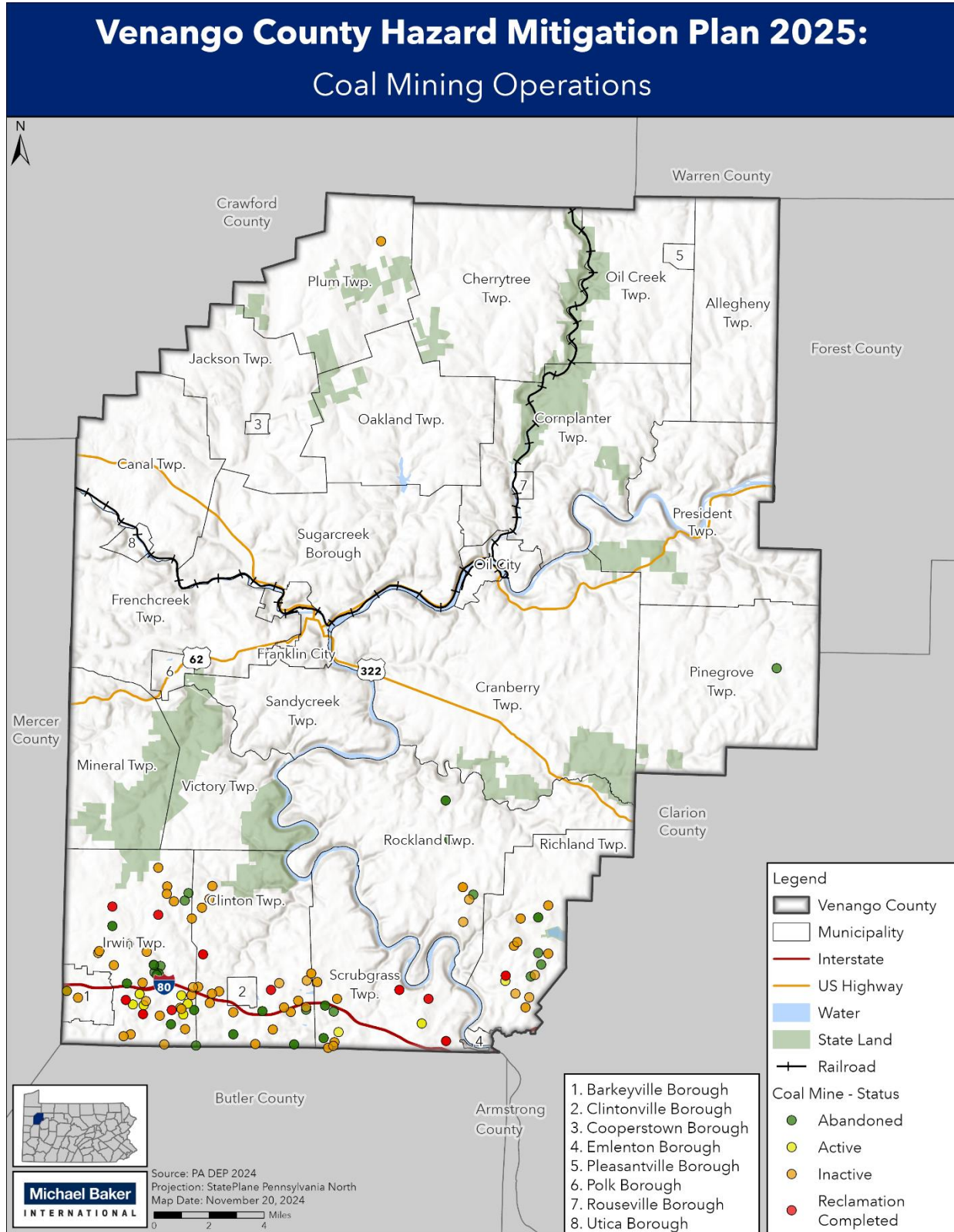
Mining, including surface, underground, and open-pit operations, has been an important economic activity in Pennsylvania since before the 1860s and was instrumental in the Commonwealth's development. Coal mining is the most prominent of Pennsylvania's mining activities and continues to be a major industry. Pennsylvania produces two types of coal: bituminous and anthracite. Bituminous coal is typically used for electricity generation and metal production. Anthracite coal, which is rarer than bituminous coal and can reach a high heating point that burns blue flame, is typically used for heating and metal production (PA DEP, 2024c).



As of December 2024, there are no active coal mines operating within Venango County. The county's coal mining operations have ceased, and no current operations are present. Statewide, Pennsylvania maintains a significant coal mining industry. In 2022, the state had 108 active coal mines, 28 underground and 80 surface mines producing a total of 39,701 short tons of coal.

Figure 4.3.16.1-1 shows the location of active and abandoned coal mining operations in Venango County. Note that the active and abandoned coal mines are primarily located on identified coal fields, however there are mines located outside the field areas.

Figure 4.3.16.1-1: Venango County Coal Mining Operations



4.3.16.2. Range of Magnitude

Major impacts from mining include surface-elevation changes and subsidence, modification of vegetation, the chemical degradation and flow redistribution of surface water and groundwater, the creation of mine voids and entry openings, adverse aesthetic impacts, and changes in land use. In addition, active and abandoned mines can also result in injury and loss of human life. This can occur in active mines where workers are injured or killed by mine collapse, entrapment, poisonous gases, inundation, explosions, fires, equipment malfunction, and improper ventilation. Injuries and death, such as All-Terrain Vehicle (ATV) accidents, falling, and drowning, can also occur in abandoned mines.

The mineral-waste disposal from coal mining, also known as abandoned mine drainage (AMD), is also a hazard. Past disposal practices have dotted Pennsylvania's landscape with unsightly refuse piles. Many of the refuse piles contain combustible materials that cause long-term air-quality problems if ignited. Burning refuse piles have also been linked to major underground coal fires, such as those at Centralia and Shamokin in the Anthracite region of Pennsylvania. Reject wastes from coal mining that contain sulfide minerals can also degrade groundwater and surface water. Coal refuse piles have historically been prolific sources of abandoned mine drainage, which has impaired many streams in Pennsylvania. The environmental impacts of coal mining are many. Mining activities and abandoned mine drainage can contaminate surface and groundwater, create acid mine drainage, cause changes in water temperature, and damage to streams, lakes, ponds, estuaries, and wetland ecosystems. Mine explosions or burning refuse piles can cause air quality problems. Although mine reclamation is required for much surface mining activity, there is still a loss of quality in landscape, damage to vegetation, and degradation of habitat.

The potential impacts of coal mining on community lifelines are as follows:

Table 4.3.16.2-1: Most Likely Lifelines Impacted by Coal Mining	
LIFELINES	NOTES
	Fire departments may be called into response and recovery if explosions or fires occur.
	Agricultural operations and water supplies may be affected through environmental contamination. There is also potential for land subsidence and structure collapse.
	Environmental contamination can have adverse health impacts on communities, leading to more strain on the local healthcare system.

Table 4.3.16.2-1: Most Likely Lifelines Impacted by Coal Mining

LIFELINES	NOTES
	Issues with mining operations may lead to additional challenges with energy production.

4.3.16.3. Past Occurrence

Although state and federal (U.S. Department of Labor, EPA, and the Office of Surface Mining and Reclamation) laws require occupational health, safety, and environmental protection in all mining activities, mining accidents still occur. The U.S. Department of Labor Mine Safety and Health Administration (MSHA) tracks mining accidents and injuries. Since 2014, there have been 19 deaths in Pennsylvania resulting from surface and underground coal mining activities. Although there have been many mining accidents in Pennsylvania’s early mining history of the 1800’s, there is no comprehensive database that tracks the data. Beyond operator accidents, there can be incidents that are a result of falls, drowning, electrocution, and ATV crashes (Mine Safety and Health Administration, 2024).

The DEP Bureau of Mine Safety is required by law to investigate all fatal and serious accidents that occur at underground Commonwealth mines. According to the Bureau, there have been four major mine emergencies in Pennsylvania coal mines. They define a mine emergency as a serious situation or occurrence that happens unexpectedly and demands immediate action or a condition of urgent need for action or assistance such as a state of emergency. Two of these were mine fires and two were inundations.

4.3.16.4. Future Occurrence

It is difficult to forecast the severity and frequency of coal mining accidents and environmental damage in Venango County. Although throughout time, the government has strengthened mining and reclamation operation and environmental regulations, permitting, and inspection criteria, this has not prevented mining accidents and environmental damage from occurring. Surface subsidence resulting from underground mining continues to be a major concern of those impacted by the mining industry. Despite the use of deep mine roof-support methods, some subsidence will eventually occur.

Surface subsidence resulting from underground mining continues to be a major concern of those impacted by the mining industry ([see Section 4.3.10](#)). Despite the use of deep mine roof support methods, some subsidence will eventually occur. It is likely that Pennsylvania will continue to modify its laws to reflect additional environmental awareness. Stricter controls on reclamation, perhaps specifically addressing the disposal of mining residuals, are likely. State and federal laws and programs have

historically placed an emphasis on environmental preservation and reclamation. As in the past, it seems likely that Pennsylvania will be at the forefront of these programs and future occurrences will decrease.

Abandoned mine drainage is an additional concern for areas previously impacted by mining operations. The risk of AMD could result in the degradation of surface and groundwater quality, impacting both ecosystems and human health. Measures taken by state, federal, and nonprofit entities such as monitoring water quality, remediating contaminated sites, and implementing sustainable mining practices have worked to prevent further environmental harm. However, it is likely some water contamination will occur (EPA, 2024a).

Overall, the probability of future coal mining events is possible as defined by the Risk Factor Methodology ([See Section 4.4.1-1](#)).

4.3.16.5. Vulnerability Assessment

Table 4.3.16.5-1 lists the number structures within .25 miles of a coal mine by municipality in Venango County. There are 227 structures within .25 miles of a coal mine. The highest concentration of total coal mines is located along the southern border of Venango County. This is due to the region's geological characteristics. The southern part of the county lies closer to the Pittsburgh Coal Seam and other coal beds. Table 4.3.16.5-2 shows structures prone to coal mining by land use. The most prone types of structures are residential and agricultural.

label	Total Structures	Structures within 0.25 mile of Coal Mining	% Structures
Allegheny Township	225	0	0%
Barkeyville Borough	159	10	6%
Canal Township	522	0	0%
Cherrytree Township	836	0	0%
Clinton Township	563	39	7%
Clintonville Borough	244	0	0%
Cooperstown Borough	215	0	0%
Cornplanter Township	1,316	0	0%
Cranberry Township	3,487	0	0%
Emlenton Borough	379	0	0%
Franklin City, City of	2,988	0	0%
Frenchcreek Township	899	0	0%
Irwin Township	3	0	0%
Jackson Township	724	92	13%
Mineral Township	570	0	0%
Oakland Township	330	0	0%

Table 4.3.16.5-1: Structures by Municipality Within .25 Miles of Coal Mining

label	Total Structures	Structures within 0.25 mile of Coal Mining	% Structures
Oil City, City of	747	0	0%
Oil Creek Township	4,757	0	0%
Pinegrove Township	496	0	0%
Pleasantville Borough	1	0	0%
Plum Township	697	1	0%
Polk Borough	471	0	0%
President Township	552	5	1%
Richland Township	260	0	0%
Rockland Township	775	0	0%
Rouseville Borough	1	0	0%
Sandycreek Township	601	36	6%
Scrubgrass Township	1,465	4	0%
Sugarcreek Borough	253	0	0%
Utica Borough	1,235	0	0%
Victory Township	2	1	50%
Scrubgrass Twp.	731	39	5%
Sugarcreek Borough	2,516	0	0%
Utica Borough	126	0	0%
Victory Township	338	0	0%
Total	29,484	227	1%

Table 4.3.16.5-2: Structures Prone to Coal Mining by Land Use

Municipality	Agriculture	Commercial	Industrial	Residential	Utility	Vacant	(blank)	Total
Allegheny Township	0	0	0	0	0	0	0	0
Barkeyville Borough	2	1	1	3	1	2	0	10
Canal Township	0	0	0	0	0	0	0	0
Cherrytree Township	0	0	0	0	0	0	0	0
Clinton Township	16	5	0	18	0	0	0	39
Clintonville Borough	0	0	0	0	0	0	0	0
Cooperstown Borough	0	0	0	0	0	0	0	0
Cornplanter Township	0	0	0	0	0	0	0	0
Cranberry Township	0	0	0	0	0	0	0	0
Emlenton Borough	0	0	0	0	0	0	0	0
Franklin City, City of	0	0	0	0	0	0	0	0

Table 4.3.16.5-2: Structures Prone to Coal Mining by Land Use

Municipality	Agriculture	Commercial	Industrial	Residential	Utility	Vacant	(blank)	Total
Frenchcreek Township	0	0	0	0	0	0	0	0
Irwin Township	33	1	0	52	0	5	1	92
Jackson Township	0	0	0	0	0	0	0	0
Mineral Township	0	0	0	0	0	0	0	0
Oakland Township	0	0	0	0	0	0	0	0
Oil City, City of	0	0	0	0	0	0	0	0
Oil Creek Township	0	0	0	0	0	0	0	0
Pinegrove Township	1	0	0	0	0	0	0	1
Pleasantville Borough	0	0	0	0	0	0	0	0
Plum Township	1	0	0	4	0	0	0	5
Polk Borough	0	0	0	0	0	0	0	0
President Township	0	0	0	0	0	0	0	0
Richland Township	17	1	0	17	0	1	0	36
Rockland Township	2	1	0	1	0	0	0	4
Rouseville Borough	0	0	0	0	0	0	0	0
Sandycreek Township	0	0	0	0	0	0	0	0
Scrubgrass Township	19	1	0	19	0	1	0	40
Sugarcreek Borough	0	0	0	0	0	0	0	0
Utica Borough	0	0	0	0	0	0	0	0
Victory Township	0	0	0	0	0	0	0	0
Total	91	10	1	114	1	9	1	227

Table 4.3.16.5-1 shows the total number of facilities in Venango County by municipality that are within .25 miles of a coal mine. There are 227 structures in close proximity to coal mining operations countywide (1% of all structures). Municipalities that have the highest proportion of their structures close to mining operations include Sandycreek Township, Scrubgrass Township, and Irwin Township. Victory Township has 50% of their facilities near coal mining operations, which is significantly higher than any other municipality. This is because one of only two critical facilities are vulnerable. Table 4.3.16.5-2 shows structures prone to coal mining by land use. The most prone types of structures are residential. Table 4.3.16.5-3 shows critical facilities municipality within .25 Miles of coal mining revealing the critical facilities that are vulnerable to mining incidents. The table only includes municipalities that have coal mines structures and critical facilities within a quarter mile of a mine operation are considered vulnerable.

Table 4.3.16.5-3: Critical Facilities by Municipality Within .25 Miles of Coal Mining			
label	Total Critical Facilities	CFs within 0.25 mile of Coal Mining	% CF within 0.25 mile of Coal Mining
Scrubgrass Township	5	1	20%
Rockland Borough	2	2	50%
Total	7	3	.43%

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could reduce vulnerability to coal mine-related hazards by decreasing the demand for coal mining activities. This also will reduce the number of people living near coal mine operations. However, if the decline results in less investment in mine safety or reduced monitoring, the vulnerability to long-term environmental risks such as abandoned mines leaking pollutants or causing subsidence could increase.

4.3.16.6. Equity in Vulnerable Communities

Communities near old and existing coal mines are at a higher risk for adverse impacts due to exposure to harmful pollutants, including coal dust, particulate matter, acid mine drainage, and contaminated water sources. These communities are often in rural areas which also are more likely to be dependent on well water. Mitigation efforts should focus on education and ensuring access to clean water. For this reason, the rural communities in these mined areas should be at the forefront of mitigation and preparedness efforts related to coal mining. As shown in Figure 4.3.16.1-1, the majority of the coal mines are concentrated at the southern border of Venango County along I-80. Irwin Township, Clinton Township, and Scrubgrass Township are the most vulnerable communities to potential well-water contamination.

4.3.17. Cyber-terrorism

4.3.17.1. Location and Extent

Cyber terrorism is a broad term that refers to acts associated with the convergence of terrorism and cyberspace. Generally, cyberterrorism involves unlawful attacks or threats against computers, networks, and the information stored therein to intimidate or coerce a government or its people to achieve political or social objectives (Denning, 2000). These acts can range from taking control of a host website, to using networked resources to directly cause destruction and harm. Table 4.3.1.17-1 includes the types and methods of cyberattacks as defined by the Pennsylvania Department of Homeland Security (PA DHS, 2017).



Table 4.3.17.1-1: Methods of Cyberattacks (PA DHS, 2017)

THREAT	DESCRIPTION
Botnet (also zombies)	A collection of computers subject to control by an outside party, usually without the knowledge of the owners, using secretly installed software robots. The robots are spread by trojan horses and viruses. The botnets can be used to launch denial-of-service attacks and transmit spam.
Card skimming	The act of using a skimmer to illegally collect data from the magnetic stripe of a credit, debit or atm card. This information, copied onto another blank card's magnetic stripe, is then used by an identity thief to make purchases or withdraw cash in the name of the actual account holder. Skimming can take place at an atm and can occur at restaurants, taxis, or other places where a user surrenders his or her card to an employee.
Denial-of-service attack	Flooding the networks or servers of individuals or organizations with false data requests so they are unable to respond to requests from legitimate users.
Malicious code (also malware)	Any code that can be used to attack a computer by spreading viruses, crashing networks, gathering intelligence, corrupting data, distributing misinformation and interfering with normal operations.
Pharming	The act of sending an e-mail to a user falsely claiming to be an established legitimate enterprise to scam the user into surrendering private information that will be used for identity theft. The e-mail directs the user to visit a website where they are asked to update personal information, such as passwords and credit card, social security, and bank account numbers that the legitimate organization already has. The website, however, is bogus and set up only to steal the user's information.

Table 4.3.17.1-1: Methods of Cyberattacks (PA DHS, 2017)

THREAT	DESCRIPTION
Phishing	Using fake e-mail to trick individuals into revealing personal information, such as social security numbers, debit and credit card account numbers and passwords, for nefarious uses.
Spam	Unsolicited bulk e-mail that may contain malicious software. Spam is now said to account for around 81 percent of all e-mail traffic.
Spear phishing	A type of phishing attack that focuses on a single user or department within an organization, addressed from someone within the company in a position of trust and requesting information such as login ids and passwords. Spear phishing scams will often appear to be from a company's own human resources or technical support divisions and may ask employees to update their username and passwords. Once hackers get this data, they can gain entry into secured networks. Another type of spear phishing attack will ask users to click on a link, which deploys spyware that can thief data.
Spoofing	Making a message or transaction appear to come from a source other than the originator.
Spyware	Software that collects information without a user's knowledge and transfers it to a third party.
Trojan horse	A destructive program that masquerades as a benign application. Unlike viruses, trojan horses do not replicate themselves, but they can be just as destructive. One of the most insidious types of trojan horse is a program that claims to rid your computer of viruses but instead introduces viruses onto your computer.
Virus	A program designed to degrade service, cause inexplicable symptoms or damage networks.
Worm	Program or algorithm that replicates itself over a computer network and usually performs malicious actions, such as using up the computer's resources and possibly shutting the system down. A worm, unlike a virus, has the capability to travel without human action and does not need to be attached to another file or program.

Cyberattacks may not always constitute acts of cyberterrorism because some acts may have relatively small impacts and only produce annoyances. A cyberattack is generally considered an act of cyberterrorism when the following motivations are present:

- Effects-based: When computer attacks result in effects that are disruptive enough to generate fear comparable to a traditional act of terrorism.
- Intent-based: When unlawful or politically motivated computer attacks are done to intimidate or coerce a government or people to further a political objective, or to cause grave harm or severe economic damage (Rollins and Wilson, 2007).
- Cyberattacks can be further divided into the following categories based on the complexity of the attack:

- Simple-Unstructured: Simple-unstructured attacks are the most common. These are amateurish attacks with relatively minimal consequences.
- Advanced-Structured: Advanced-structured attacks are more sophisticated and consequential and have a greater emphasis on targeting victims prior to an attack, resulting in a more debilitating effect.
- Complex-Coordinated: Complex-coordinated attacks are the most advanced and most troublesome type of attacks where success could mean a network shutdown (Denning, 2000).

Cyber terrorism can cause severe disruptions to transportation, public safety, and utility services, all of which are critical infrastructure that are highly dependent on information technology. Cyber terrorism can take many forms, including attacks through physical means, electronic means, and use of malicious code. Cyber terrorists can also have a wide range of personal, political, or cultural agendas. All state agencies, as well as individuals, businesses, and other institutions in Venango County, are potential targets for cyberterrorism. Potential threats include identity theft, loss of sensitive information, disruption of services, and other malicious activity.

Cyber terrorists can be difficult to identify because the internet provides a meeting place for individuals from various parts of the world. Individuals or groups planning a cyber-attack are not organized in a traditional manner, as they are able to effectively communicate over long distances without delay. Cyberattacks are also unpredictable and typically occur without warning.

4.3.17.2. Range of Magnitude

In recent years, cyber terrorism has become a significant threat and can impact people, businesses, institutions, local governments, and state agencies to varying degrees. Impacts from a large-scale cyberterrorism event could disrupt the state's economy and potentially threaten its economic stability. The magnitude of a cyber terrorism attack will vary greatly based on the extent of systems affected and duration of the impact. Additionally, the magnitude will vary based upon which specific system is affected by an attack, the ability to preempt an attack, and an attack's effect on continuity of operations. The largest threat to institutions from cyber terrorism comes from any processes that are networked and controlled via computer. The county and individual municipalities should address and take measures to reduce any vulnerabilities that could allow access to sensitive data or processes. In addition, attacks on institutions or organizations outside of the county or even the state can impact residents, businesses, and government services.

The potential impacts of cyberterrorism on community lifelines are as follows:

Table 4.3.14.2-1: Most Likely Lifelines Impacted by Cyberterrorism	
LIFELINES	NOTES
	Community safety may be threatened, and government services targeted by cyberterrorism activities.
	Energy infrastructure may be a target for cyberterrorism activities.
	Hazardous materials facilities and operations may be targets for cyber terrorists.

4.3.17.3. Past Occurrence

Venango County has experienced several cyber-related incidents in recent years. In 2011, a forensic analysis revealed that the County's electronic voting system had been remotely accessed on multiple occasions by an unknown source (Truthout, 2011). In addition, there have been several ongoing risks posed by cybercriminals to residents and local institutions in Venango County. In 2024, there have been multiple victims of hacking scams including scammers attempting to take \$30,000 from a Cherrytree Township resident. The aging population of Venango County faces unique risks from cybersecurity threats due to factors such as limited familiarity with technology and increased reliance of online services for healthcare, banking, and communication.

4.3.17.4. Future Occurrence

Cyber terrorism is an emerging hazard that has the potential to impact the County's computer infrastructure and the systems and services that are provided to the public. Concerns about cyberterrorism throughout the United States is growing as its impacts could have potentially crippling effects. Security experts describe the threat of cyberterrorism as imminent. The future occurrence of cyberterrorism can be considered *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

4.3.17.5. Vulnerability Assessment

Generally, cyber terrorism has no direct effect on the environment; however, the environment may be affected if a hazardous materials release occurred because of critical infrastructure failure as a result of cyber terrorism. Similarly, an act of cyber terrorism on a nuclear facility could have devastating environmental consequences if

the plant suffered an intentional catastrophic failure. Please see [Section 4.3.13](#) for more information on Hazardous Materials Release.

All county and municipal facilities are vulnerable to cyber terrorism. While the physical structures of these buildings are generally not at risk, information systems and data stored within them are vulnerable. Government computer networks contain sensitive information that is integral to the security of the Commonwealth and could be the target of a cyberattack. County and municipal governments may also possess and maintain forms of personal and financial information, including tax filings, birth and death records, Social Security numbers, medical information, and more. Additionally, many critical facilities that are essential to Venango County operations are reliant upon computer networks to monitor and control critical functions. For example, an attack on internet access or the power grid could have detrimental impacts on County services and functions. Additionally, a large-scale computer breach could lead to economic costs in lost productivity to the impacted agency/organization and potentially related businesses and industries. However, lost revenues and productivity would depend on the type of magnitude of the cyber terrorism event.

All communities in Venango County are vulnerable on some level, directly or indirectly, to a cyber terrorism attack. However, in general, areas with higher concentrations of government or industry facilities may have higher risk. Additionally, areas with higher concentrations of people, businesses, and critical infrastructure may be at higher risk.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population will little to no effect on an increase or decrease of cyber-terrorism vulnerability of the current communities in Venango County.

The aging population of Venango County (see Chart 2.3-1 Median Age in Venango County By Municipality) are more vulnerable to cyber-terrorism. Older populations may be more vulnerable due to a lack of

4.3.17.6. Equity in Vulnerable Communities

Households with those 65 or older may be more susceptible to cyber-attacks as older adults have lower levels of digital literacy compared to younger generations. See Chart 2.3-1 Median Age in Venango County By Municipality to see the most vulnerable municipalities and their age correlation. Rockland Township and Oil Creek Township are the most vulnerable with the oldest average age. This makes them more susceptible to scams, phishing, and other forms of cybercrime. People in low-income or marginalized communities such as Polk Borough and Roseville Township (see Chart 2.3-2 Venango County Mean Household Income) often have less access to education and resources on cybersecurity. The communities may not be able to afford the most up to

date technology or cybersecurity tools, such as firewalls, antivirus, or secure home networks leaving them more exposed to cyber threats.

4.3.18. Transportation Incidents

4.3.18.1. Location and Extent

For this analysis a transportation incident is defined as an incident involving highway, air, or rail travel. Accidents involving hazardous materials are considered under [Section 4.3.13](#) of this report. This analysis includes the location of all public airports, passenger and freight rail lines, and highways where major accidents are likely to occur.



Within Venango County there is an intricate network of roads and bridges connecting its community and supporting local industries. Major highways such as I-80, US 62, US 322, and SR-8 and SR-27 serve as critical transportation corridors linking towns such as Oil City, Franklin, and Seneca with surrounding counties. Venango's smaller state and local roads weave through its rural and wooded landscapes. Venango County transportation systems are shown in Figure 4.3.18.2-1-.

Given the location of Venango County along the Allegheny River, bridges are a key part of its infrastructure, there are 288 bridges in the county (PennDOT, 2024b). Notable crossings, such as the Veterans Memorial Bridge in Oil City and the 8th Street Bridge in Franklin, connect communities across the river. Venango County is in District 1 of PennDOT's 11 Engineering Districts throughout the state maintain, restore, and expand the state's highway systems. Each office does its part to deliver a safe and efficient transportation system on the nearly 40,000 miles of highway and roughly 25,400 bridges that PennDOT is responsible for. District 1 includes over 3,600 road miles and more than 2,000 bridges.

4.3.18.2. Range of Magnitude

At a minimum, transportation accidents can result in damage to the vehicles and minor injuries to passengers and drivers. At worst, significant transportation incidents can result in death or serious injury or extensive property loss or damage coupled with business interruptions and hours of congestion. Road and railway accidents in particular have the potential to result in hazardous materials releases if the vehicle involved in an accident is hauling hazardous materials. The expected impacts of transportation incidents are amplified by the fact that there is often little warning of accidents.

Venango county faces potential worst-case transportation accidents due to its mix of highways, railways, rivers, and pipelines. A major highway accident involving hazardous materials on routes like US 62 or I-80 could result in chemical spills, explosions, injuries, and community evacuations. River accidents also pose a potential environmental damage, particularly to the Allegheny River.

The potential impacts of transportation incidents on community lifelines are as follows:

Table 4.3.18.2-1: Most Likely Lifelines Impacted by Transportation Incidents	
LIFELINE	NOTES
	Direct harm to the community, including drivers, bicyclists, and pedestrians.
	Medical personnel might be needed due to the significant risk of injury and death that transportation incidents represent.
	Potential negative consequences of incidents occurring while transporting these materials.

Figure 4.3.18.2-1: Venango County Transportation Systems

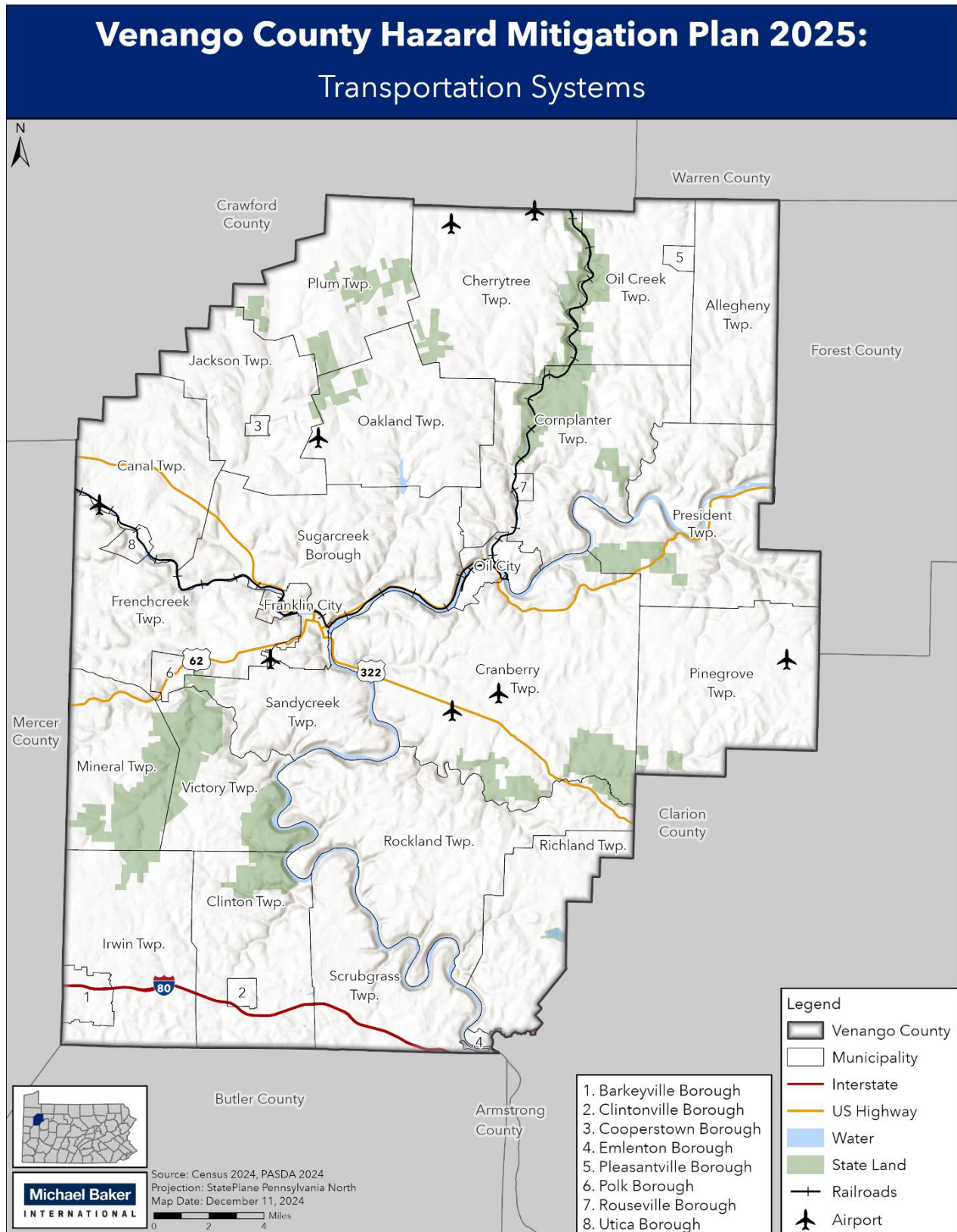


Figure 4.3.18.2-2: Venango County Traffic Volume

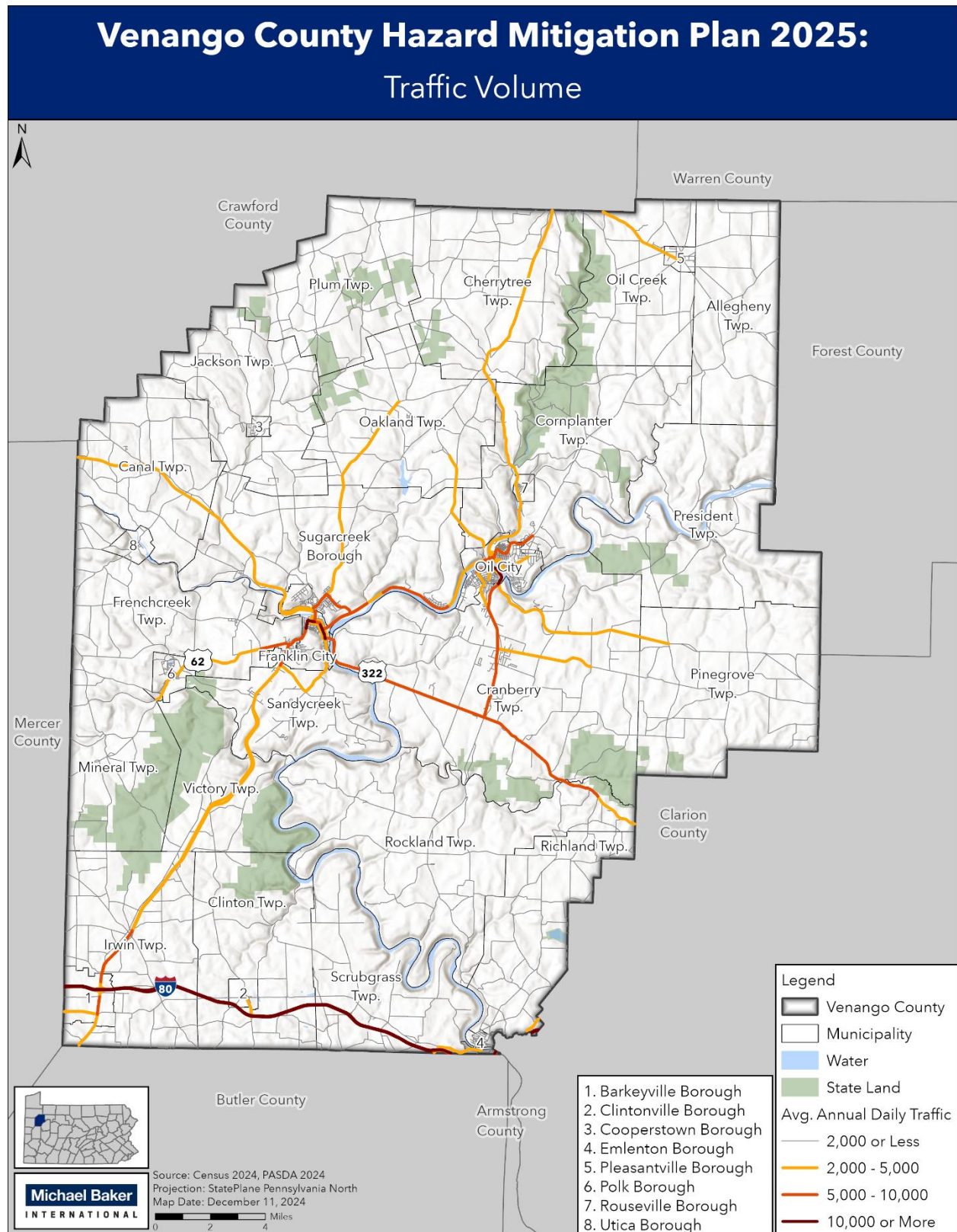


Figure 4.3.18.2-2 describes the traffic volume in Venango County. The average annual daily traffic volume is the densest on the US and State routes. In addition, there is a higher volume density in the more populated cities such as Franklin and Oil City. Local roads feeding into the densely populated areas have an average annual daily traffic volume of 2,000 – 5,000 drivers.

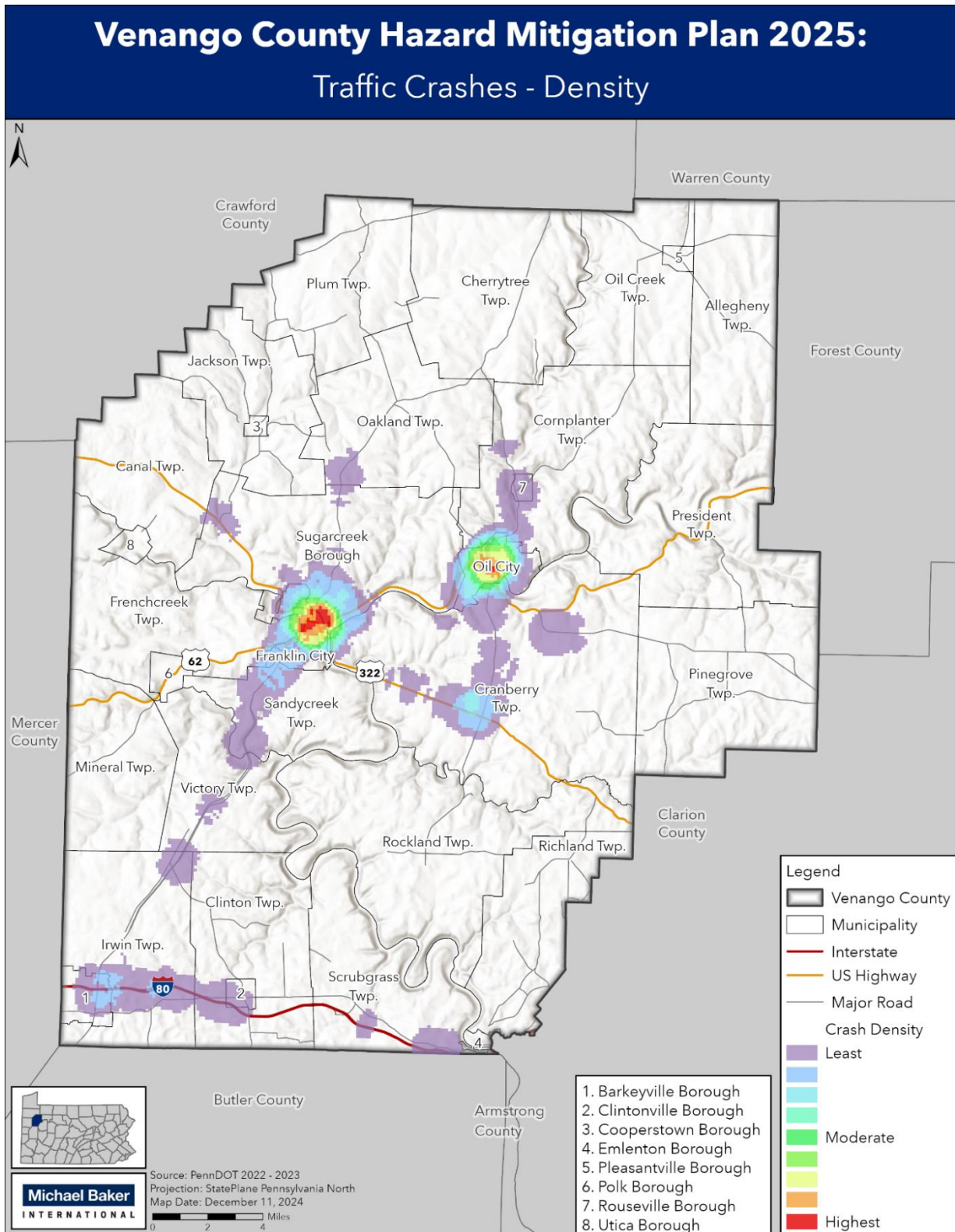
4.3.18.3. Past Occurrence

Vehicle crashes continues to be a risk throughout the County. PennDOT statistics for reportable vehicle crashes in Venango County are shown in Table 4.3.23-2.

Table 4.3.18.3-1: Reportable Traffic Crash Data, 2019 – 2023 (PennDOT, 2023)					
Type of Incident in Venango county	2019	2020	2021	2022	2023
Crashes	518	520	519	499	427
Traffic Fatalities	7	11	12	7	5
Pedestrian Fatalities	0	0	0	2	0
Percent Seat Belt Use in Crashes	86%	88%	85%	84%	84%
Alcohol-Related Fatalities	2	1	5	2	0

Figure 4.3.18.3-1 shows the density of transportation crashes throughout Venango County. Red and yellow areas show roadways where the most crashes occurred between 2021 and 2024. In Venango County, most accidents occur in Franklin, Oil City, and along I-80.

Figure 4.3.18.3-1: Venango County Traffic Crashes Density



4.3.18.4. Future Occurrence

Venango County is vulnerable to future transportation incidents due to its reliance on major routes for hazardous material transit, aging infrastructure, and limited emergency response resources. Weather events could increase the likelihood of accidents by disrupting roads, railways, and river transportation. Aging infrastructure of highways, bridges, and pipelines further roads, railways and river transportation. It is impossible to predict future transportation-related hazards, however the future occurrence of transportation incidents can be considered *likely* according to the Risk Factor Methodology (see Table 4.4-1).

4.3.18.5. Vulnerability Assessment

A transportation-related incident can occur on any stretch of road in Venango County. However, severe accidents are more likely on the County's highways, which experience heavier traffic volumes including heavy freight vehicles. The combination of high traffic volume, severe winter weather in the County and large numbers of hazardous materials haulers increase the chances of traffic accidents occurring. Accidents may also occur on any rail line or air flight path.

Because of the widespread transportation network in Venango County, a large number of structures are exposed to the threat of transportation incidents. Table 4.3.18.5-1 shows the structures, critical facilities (excluding oil and gas wells) that are located near highways, active rail lines, and that are near a TRI site. No conventional or unconventional oil and gas wells are in areas vulnerable to transportation incidents.

The communities most at risk are President Township with 100% of its critical facilities located .25 miles from the highway, Rouseville Borough with 100% of their critical facilities located within a TRI site and an active rail line. Franklin and Oil City's critical facilities are increasingly vulnerable to all transportation incidents due to the high volume of transportation.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could reduce transportation incident vulnerabilities by decreasing traffic volumes, leading to fewer collisions and less traffic. However, if population decline results in reduced funding for road maintenance, infrastructure improvements, and emergency response services, the vulnerability to transportation incidents could increase.

Table 4.3.18.5-1: Critical Facilities (CF) Vulnerable to Transportation Incidents, 2024

Municipality	Total CFs	CFs within 1.5 mile of TRI Site	PCT of CFs within 1.5 miles of TRI Site	CFs within 0.25 miles of Highway	PCT of CFs within 0.25 miles of Highway	CFs within 0.25 miles of Active Rail Line	PCT of CFs within 0.25 miles of Active Rail Line
Allegheny Township	1		0%		0%		0%
Barkeyville Borough	1		0%		0%		0%
Canal Township	3		0%	2	67%	1	33%
Cherrytree Township	5		0%		0%		0%
Clinton Township	4		0%		0%		0%
Clintonville Borough	2		0%		0%		0%
Cooperstown Borough	2		0%		0%		0%
Cornplanter Township	7	6	86%		0%		0%
Cranberry Township	18		0%	2	14%		0%
Emlenton Borough	4		0%		0%		0%
Franklin City, City of	33	24	73%	20	61%	11	33%
Frenchcreek Township	4	3	75%		0%	2	50%
Irwin Township	5		0%	1	20%		0%
Jackson Township	3		0%		0%		0%
Mineral Township	1		0%		0%		0%
Oakland Township	2		0%		0%		0%
Oil City, City of	18	18	100%	4	22%	7	39%
Oil Creek Township	1		0%		0%		0%
Pinegrove Township	5		0%		0%		0%
Pleasantville Borough	3		0%		0%		0%
Plum Township	1		0%		0%		0%
Polk Borough	6		0%	5	83%		0%
President Township	2		0%	2	100%		0%
Richland Township	3		0%		0%		0%
Rockland Township	5	2	40%		0%		0%
Rouseville Borough	1	1	100%		0%	1	100%
Sandycreek Township	6	4	67%	1	17%		0%
Scrubgrass Township	2		0%	1	50%		0%
Sugarcreek Borough	14	10	71%	1	7%	6	43%
Utica Borough	3		0%		0%		0%

Table 4.3.18.5-1: Critical Facilities (CF) Vulnerable to Transportation Incidents, 2024

Municipality	Total CFs	CFs within 1.5 mile of TRI Site	PCT of CFs within 1.5 miles of TRI Site	CFs within 0.25 miles of Highway	PCT of CFs within 0.25 miles of Highway	CFs within 0.25 miles of Active Rail Line	PCT of CFs within 0.25 miles of Active Rail Line
Victory Township	1		0%		0%		0%
TOTAL	163	68	42%	39	24%	28	17%

4.3.18.6. Equity in Vulnerable Communities

Lower-income communities may be at a higher risk of transportation incidents as infrastructure may be outdated or poorly maintained, increasing the risk of severe outcomes from transportation incidents. Rural areas may also have disproportionate effects due to their secluded locations which could affect the access to timely and effective emergency response services.

4.3.19. Utility Interruption

4.3.19.1. Location and Extent

Utility interruptions include any impairment of the functioning of telecommunication, gas, electric, water, or waste networks. Interruptions or outages occur because of geomagnetic storms, fuel or resources shortage, electromagnetic pulses, information technology failures, transmission facility or linear utility accident, and major energy, power, or utility failure. The focus of utility interruptions as a hazard lies in fuel, energy, or utility failure.



These kinds of interruptions rarely spontaneously occur on their own; this hazard is often secondary to other natural hazard events, particularly transportation incidents, lightning strikes, extreme heat or cold events, and coastal and winter storms. For example, severe thunderstorms or winter storms could bring down power lines and cause widespread disruptions in electricity service. Strong heat waves may result in rolling blackouts where power may not be available for an extended period. Local outages may be caused by traffic accidents or wind damage.

According to the 2022 5-year American Community Survey, in Venango County, 10.3% of housing units use electric heat, followed by 67.40% of homes using utility gas as their heat source (U.S. Census Bureau, 2022). As a result, an interruption in either of those utilities could affect a significant number of residents.

4.3.19.2. Range of Magnitude

Most severe power failures or outages are regional events. With the loss of power, electric-powered equipment and systems will not be operational. Examples may include lighting; HVAC and ancillary support equipment; communication (i.e. public address systems, telephone, computer servers, and peripherals); ventilation systems; fire and security systems; refrigerators, sterilizers, trash compactors, office equipment; and medical equipment. This can cause food spoilage, loss of heat or air conditioning, basement flooding (sump pump failure), lack of light, loss of water (well pump failure), lack of phone service, or lack of internet service. These issues are often more of a nuisance than a hazard but can cause damage or harm depending on the population affected and the severity of the outage.

The severity of a utility interruption can be compounded with extreme weather events, especially winter weather events. Interruptions can also be more severe for special needs populations that are dependent on electronic medical equipment. Utility interruptions can significantly hamper first responders in their efforts to provide aid in a compound disaster situation, especially with losses of telecommunications and wireless capabilities. Telecommunications interruptions will also hinder first responders' efforts. Additionally, an internet outage could be crippling to the economy, as many companies and government entities process payments and invoices electronically rather than with physical checks.

In a possible worst-case scenario in Venango County, a winter storm event could cause widespread power outages, leaving citizens without heat during subzero temperatures for several days. The power outage would also put elderly populations or others at risk of health problems due to the lack of heat and the inability to call for assistance or leave their homes. Power lines may also be difficult to repair because of the magnitude of the storm.

The potential impacts of utility interruption on the community lifelines are as follows:

Table 4.3.19.2-1: Most Likely Lifelines Impacted by Utility Interruption	
LIFELINES	NOTES
	Government facilities may be impacted directly and the capability to administer services diminished.
	Water and electrical utilities in homes and potentially different aspects of the food supply chain will be impacted.

Table 4.3.19.2-1: Most Likely Lifelines Impacted by Utility Interruption	
LIFELINES	NOTES
	Healthcare facilities may be impacted directly and therefore the capacity to deal with patients is diminished.
	Fuel usage may increase as a result of electricity no longer being available for an extended period of time.

4.3.19.3. Past Occurrence

Energy emergencies may be caused by nationwide shortages or localized supply problems. Venango County experienced several utility disruptions in recent years, primarily due to severe weather conditions and infrastructure challenges. One of the more notable incidents occurred in 2019. Venango County experienced a county-wide power outage. More than 800 people were without power. This outage was a result of a downed wire. In 2024, Venango County recognized challenges posed by frequent and extended outages. The County was awarded grant funding to strengthen its rural electric grid. These improvements aim to prevent future outages and enhance the resilience of the county’s current services.

4.3.19.4. Future Occurrence

Utility interruptions will continue to occur annually with minimal impact. Widespread utility interruption events usually occur approximately once every five years, usually as a secondary effect of an extreme weather event. These interruptions should be anticipated, and first responders should be prepared during severe weather events. Research by the National Oceanic and Atmospheric Administration (NOAA) suggests that climate change may cause more extreme storms in Pennsylvania (Frankson et. al., 2017).

Venango County is expected to see large increases in precipitation and numbers of very hot and very cold days (MARISA, 2024). These factors can increase the occurrence of hazards such as flooding, hurricanes and tropical storms, landslides, tornados and windstorms, wildfires, and winter storms. Impacts from any of these hazards can lead to utility interruption on a range of scales. Overall, the future probability of utility interruptions can be considered *likely* according to the Risk Factor Methodology (see Table 4.4-1).

Aging infrastructure also brings risk in the form of potential utility interruptions, particularly for places like Venango County with aging infrastructure. In many utility systems, significant portions of the equipment and facilities date from the growth

periods of the 1950s and 1960s. As this equipment ages, it deteriorates from the constant wear and tear of service. Eventually, the equipment reaches a point at which it will either fail on its own or as a result of outside forces (storms, loads it was designed to handle but no longer can, etc.). These failures cause service interruptions and can require expensive emergency repairs. In addition, as repairs have taken place along transmission routes, there is often a mix of new and old equipment along the line; repair, not replacement is generally the choice to resolve an issue.

The wholesale replacement of a system is not a feasible solution for utility companies. This would require the interruption of services while the replacement occurs, as well as accessing the existing system (which may lay under roads, private property, or other inconvenient places). Utility companies face the challenge of managing the issue of the aging infrastructure. They are tasked with reducing the effects of aging equipment while also controlling the deterioration of the existing system as much as possible. This balance will be tenuous as transmission equipment continues to age and break down. These breakdowns will likely lead to more frequent utility disruptions as time goes by.

4.3.19.5. Vulnerability Assessment

All jurisdictions are vulnerable on some level to utility interruptions, but because this hazard often occurs in conjunction with other hazards, jurisdictions that have been identified as more vulnerable to winter storms, windstorms, tornado, flooding, and other natural hazard events may be more vulnerable to a utility interruption.

Emergency medical facilities, including retirement homes and senior centers are particularly vulnerable to power outages. While back-up power generators are often used at these facilities, loss of electricity may result in hot or cold temperatures for which elderly populations are particularly vulnerable. [Appendix D](#) provides a list of where those facilities are in Venango County. Conservation and improved technology have resulted in more efficient use of energy sources. The increasing use of alternative fuel supplies, such as kerosene heaters, wood burning stoves, coal burners, etc., has also decreased our vulnerability to future shortages. However, severe weather extremes, accidents, labor strikes, terrorism, or nationwide shortages could cause significant energy shortage problems.

Population is declining in all of Venango County (see Table 2.3-1 Venango County Population Trends) with a loss of almost 5,000 people since 2010. The decrease in population could reduce vulnerability to utility interruptions by lowering the overall demand for services such as electricity, water, and gas. This lessens the strain on infrastructure and reduces the risk of services disruptions.

4.3.19.6. Equity in Vulnerable Communities

Utility interruptions can disproportionately affect vulnerable populations, including the elderly, individuals with disabilities, and those with chronic health issues who rely on electricity for medical equipment. Adequate preparedness for these groups prioritizes these groups by ensuring that backup power systems, such as generators. Additionally, low-income communities often face challenges related to aging or poorly maintained infrastructure, which can increase the likelihood and duration of utility interruptions. Adequate mitigation should focus on improving infrastructure resilience.

4.4. HAZARD VULNERABILITY SUMMARY

4.4.1. Methodology

Ranking hazards helps communities set goals and priorities for mitigation based on their vulnerabilities. A Risk Factor (RF) is a tool used to measure the degree of risk for identified hazards in a particular planning area. The RF can also assist local community officials in ranking and prioritizing hazards that pose the most significant threat to a planning area based on a variety of factors deemed important by the planning team and other stakeholders involved in the hazard mitigation planning process. The RF system relies mainly on historical data, local knowledge, general consensus from the planning team, and information collected through development of the hazard profiles included in [Section 4.3](#). The RF approach produces numerical values that allow identified hazards to be ranked against one another; the higher the RF value, the greater the hazard risk.

RF values were obtained by assigning varying degrees of risk to five categories for each of the hazards profiled in the HMP Update. Those categories include probability, impact, spatial extent, warning time, and duration. Each degree of risk was assigned a value ranging from one to four. The weighting factor is shown in Table 4.4-1. To calculate the RF value for a given hazard, the assigned risk value for each category was multiplied by the weighting factor. The sum of all five categories equals the final RF value, as demonstrated in the following example equation:

$$\text{Risk Factor Value} = [(Probability \times .30) + (Impact \times .30) + (Spatial \text{ Extent} \times .20) + (Warning \text{ Time} \times .10) + (Duration \times .10)]$$

Table 4.4-1 summarizes each of the five categories used for calculating a RF for each hazard. According to the weighting scheme applied, the highest possible RF value is 4.0. In addition to the RF, a column on climate change impacts was added to summarize the anticipated impacts on the frequency, intensity, and duration of each hazard due to climate change.

Table 4.4.1-1: Summary of Risk Factor Approach

Risk Assessment Category	Degree of Risk			Weight Value
	Level	Criteria	Index	
PROBABILITY	Unlikely	Less than 1% annual probability	1	30%
What is the likelihood of a hazard event occurring in a given year?	Possible	Between 1% and 49.9% annual probability	2	
	Likely	Between 50% and 90% annual probability	3	
	Highly Likely	Greater than 90% annual probability	4	
IMPACT	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	30%
In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?	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.	2	
	Critical	Multiple deaths and injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one week.	3	
	Catastrophic	High number of deaths and injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
SPATIAL EXTENT	Negligible	Less than 1% of area affected.	1	20%
How large of an area could be impacted by a hazard event? Are impacts localized or regional?	Small	Between 1% and 10.9% of area affected.	2	
	Moderate	Between 11% and 25% of area affected.	3	
	Large	Greater than 25% of area affected.	4	
WARNING TIME	> 24 hours	Self-defined	1	10%
is there usually some lead time associated with the hazard event? Have warning measures been implemented?	12 to 24 hours	Self-defined	2	
	6 to 12 hours	Self-defined	3	
	< 6 hours	Self-defined	4	
DURATION	< 6 hours	Self-defined	1	10%
	< 24 hours	Self-defined	2	

Table 4.4.1-1: Summary of Risk Factor Approach					
Risk Assessment Category	Degree of Risk				Weight Value
	Level	Criteria		Index	
How long does the hazard event usually last?	< 1 week	Self-defined	criteria that define them may be adjusted based on hazard addressed.	3	
	> 1 week	Self-defined		4	
CLIMATE CHANGE	Negative Impact	Expected to increase risks			N/A
How will climate change impact the other 5 ratings for the hazard?	Potential Negative	Potential to increase risks			
	Little To No Impact	No impact or small risk increase through indirect means			
	Positive Impact	Risk expected to decrease			

4.4.2. Ranking Results

Using the methodology described in [Section 4.4.1](#), Table 4.4.2-2 lists the Countywide RF calculated for each of the 19 potential hazards identified in the 2025 HMP Update. Hazards identified as high risk have risk factors greater than 2.5. Risk Factors ranging from 2.0 to 2.4 were deemed moderate risk hazards. Hazards with Risk Factors 1.9 and less are considered low risk. Based on these results, Venango County has 4 high risk hazards, 8 moderate risk hazards, and 7 low risk hazards for a total of 19 hazards.

Hazard RFs and rankings have remained generally consistent with those identified in the 2020 Plan Update, with a few notable updates due to conversations with municipalities and other stakeholders. Hazardous Materials Waste is now the number one hazard, replacing Winter Storm as feedback indicated winter storm probabilities have decreased. In addition, pandemic and infectious disease moved up to moderate following the 2020 COVID-19 pandemic.

The 2020 update included 12 hazards, the 2025 now includes 19 hazards. The addition of Coal Mining, Cyber Terrorism, Hazardous Materials Release, Conventional and Unconventional Oil and Gas Wells, Utility Interruption, and Civil Disturbance were the added hazardous.

Materials Release is a high-risk hazard, while Conventional Oil and Gas Wells, Unconventional Oil and Gas Wells, Coal Mining are medium-risk hazards.

A risk assessment result for the entire county does not mean that each municipality is at the same amount of risk to each hazard. Table 4.4-3 shows the different municipalities

in Venango County and whether their risk is greater than ($>$), less than ($<$), or equal to ($=$) the risk factor assigned to the County as a whole.

Table 4.4.2-1: Ranking of Hazard Types Based on Risk Factor Methodology

RISK	HAZARD NATURAL (N) OR MAN-MADE (M)	RISK ASSESSMENT CATEGORY						RF
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	CLIMATE CHANGE	
HIGH	EH - Hazardous Materials Release (M)	2.0	3.0	4.0	1	3	↔	2.7
	Winter Storm (N)	2.7	2.6	3.3	1	3	↔	2.7
	Utility Interruption (M)	2.8	2.4	2.9	3	2	↑	2.6
	Tornado / Windstorm (N)	2.4	2.5	2.9	4	1	↔	2.6
MODERATE	Dam Failure (M)	1.0	3.0	3.0	4	2	↑	2.4
	EH - Conventional Oil and Gas Wells (M)	2.0	3.0	1.0	4	3	↔	2.4
	EH - Unconventional Oil and Gas (M)	2.0	3.0	1.0	4	3	↔	2.4
	Flood, Flash Flood, Ice Jam (N)	2.1	2.2	2.4	3	3	↔	2.4
	Pandemic and Infectious Disease	1.0	3.0	3.0	4.0	1.0	↔	2.3
	Transportation Accidents (M)	2.4	2.3	2.0	4	1	↑	2.3
	Wildfire (N)	2.0	2.0	2.0	4	2	↑	2.2
	EH - Coal Mining (M)	2.0	2.0	1.0	4	3	↔	2.1
	Drought (N)	2.1	1.5	2.3	1	4	↑	2.1
LOW	Cyber Terrorism (M)	1.5	1.5	1.7	4	2	↔	1.8
	Radon Exposure (N)	2.0	1.0	2.0	1	4	↔	1.8
	Hurricane, Tropical Storm, and Nor'easter (N)	1.0	1.0	4.0	1	1	↑	1.6
	Earthquake (N)	1.3	1.3	1.5	4	1	↔	1.6
	Civil Disturbance (M)	1.3	1.4	1.2	4	1	↔	1.5
	Landslide (N)	1.0	1.0	1.0	4	1	↑	1.3

Based on these results, there are four *high* risk hazards, eight *moderate* risk hazards and seven *low* risk hazards in Venango County. Mitigation actions were developed for all hazards (see [Section 6.4](#)) with an emphasis on the higher-ranked hazards.

A risk assessment result for the entire county does not mean that each municipality is at the same amount of risk to each hazard. Table 4.4-3 shows the different municipalities in Venango County and whether their risk is greater than (>), less than (<), or equal to (=) the risk factor assigned to the County as a whole.

	EH - Hazardous Materials Release	Winter Storm	Utility Interruption	Tornado / Windstorm	Dam Failure	EH - Conventional Oil and Gas Wells (M)	EH - Unconventional Oil and Gas (M)	Flood, Flash Flood, Ice Jam	Pandemic and Infectious Disease	Transportation Accidents	Wildfire	EH - Coal Mining (M)	Drought	Cyber Terrorism	Radon Exposure	Hurricane, Tropical Storm, and Nor'easter	Earthquake	Nuclear Incidents (Radon)	Civil Disturbance	Landslide
	2.7	2.7	2.6	2.6	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.1	2.1	1.8	1.8	1.6	1.6	1.6	1.5	1.3
Allegheny Township	>	<	>	=	<	=	=	>	>	>	>	=	<	>	>	=	>	>	>	=
Barkeyville Borough	>	>	=	<	<	=	=	>	>	>	=	=	<	>	=	<	=	=	<	>
Canal Township	>	>	>	>	<	=	=	>	>	>	>	=	>	>	=	<	>	>	>	=
Cherrytree Township	>	<	<	<	<	=	=	<	>	>	<	=	<	>	>	=	<	>	>	>
Clinton Township	<	<	=	>	<	=	=	>	>	<	<	=	>	>	=	<	=	>	>	>
Clintonville Borough	>	<	<	<	<	=	=	<	>	<	<	=	<	>	=	=	<	<	>	=
Cooperstown Borough		<	=	>	<	=	=	>	>	>	>	=	>	>	=	=	>	>	>	=
Cornplanter Township	>	<	=	=	<	=	=	>	>	=	>	=	>	>	>	<	>	>	>	=

	EH - Hazardous Materials Release	Winter Storm	Utility Interruption	Tornado / Windstorm	Dam Failure	EH - Conventional Oil and Gas Wells (M)	EH - Unconventional Oil and Gas (M)	Flood, Flash Flood, Ice Jam	Pandemic and Infectious Disease	Transportation Accidents	Wildfire	EH - Coal Mining (M)	Drought	Cyber Terrorism	Radon Exposure	Hurricane, Tropical Storm, and Nor'easter	Earthquake	Nuclear Incidents (Radon)	Civil Disturbance	Landslide
	2.7	2.7	2.6	2.6	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.1	2.1	1.8	1.8	1.6	1.6	1.6	1.5	1.3
Cranberry Township	=	>	=	<	=	=	=	<	>	>	>	=	>	>	=	=	>	>	<	>
Emlenton Borough	<	>	<	>	<	=	=	>	>	>	>	=	>	<	=	=	>	>	<	=
Franklin, City of	=	<	<	<	<	=	=	<	>	<	>	=	>	<	>	=	>	<	<	=
Frenchcreek Township	=	<	<	<	=	=	=	>	>	=	<	=	<	>	=	=	<	<	>	=
Irwin Township	<	>	>	>	=	=	=	>	>	>	>	=	>	>	=	=	>	>	>	=
Jackson Township	>	>	>	>	<	=	=	>	>	>	<	=	>	>	=	=	>	>	>	>
Mineral Township	<	<	<	<	<	=	=	<	>	<	<	=	>	>	=	=	>	<	>	=
Oakland Township	>	<	<	<	=	=	=	<	>	<	<	=	<	<	=	=	<	<	<	=
Oil City, City of	=	<	<	<	=	=	=	>	>	<	<	=	<	>	=	=	>	>	<	=
Oil Creek Township	>	>	=	<	<	=	=	>	>	<	<	=	<	>	>	=	>	>	>	=
Pinegrove Township	=	0	0	0	=	=	=	0	>	0	0	=	0	0	=	=	0	0	0	=
Pleasantville Borough	>	>	=	<	<	=	=	>	>	>	<	=	<	>	>	=	>	>	>	>
Plum Township	>	<	0	>	<	=	=	<	>	0	<	=	<	0	>	=	>	>	0	=
Polk Borough	=	<	<	<	<	=	=	<	>	<	>	=	>	<	>	=	>	<	>	=
President Township	=	0	0	0	<	=	=	0	>	0	0	=	0	0	>	=	0	0	0	=
Richland Township	<	>	=	>	>	=	=	>	>	=	>	=	<	<	=	=	>	>	>	=

	EH - Hazardous Materials Release	Winter Storm	Utility Interruption	Tornado / Windstorm	Dam Failure	EH - Conventional Oil and Gas Wells (M)	EH - Unconventional Oil and Gas (M)	Flood, Flash Flood, Ice Jam	Pandemic and Infectious Disease	Transportation Accidents	Wildfire	EH - Coal Mining (M)	Drought	Cyber Terrorism	Radon Exposure	Hurricane, Tropical Storm, and Nor'easter	Earthquake	Nuclear Incidents (Radon)	Civil Disturbance	Landslide
	2.7	2.7	2.6	2.6	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.1	2.1	1.8	1.8	1.6	1.6	1.6	1.5	1.3
Rockland Township	<	>	>	>	<	=	=	<	>	=	<	=	>	<	>	=	>	>	>	>
Rouseville Borough	=	>	>	>	=	=	=	>	>	<	>	=	>	<	=	=	=	<	>	=
Sandycreek Township	=	<	<	<	=	=	=	>	>	<	<	=	<	<	=	=	=	<	>	>
Scrubgrass Township	<	>	>	>	=	=	=	<	>	<	>	=	<	>	=	=	>	>	>	>
Sugarcreek Borough	=	>	>	>	=	=	=	>	>	>	>	=	>	>	=	=	>	>	>	=
Utica Borough	>	<	>	>	<	=	=	<	>	>	<	=	>	>	=	=	>	>	>	=
Victory Township	<	<	<	<	<	=	=	>	>	>	<	=	>	>	=	=	<	>	>	>

This table was developed based on the Risk Assessment findings and municipal input from the "Evaluation of Identified Hazards and Risk" and "Jurisdictional Hazard Risk Ranking" forms distributed to each municipality. Most municipalities also met with the HMSC to discuss the forms. Those changes are reflected in the table.

4.4.2.1. Historic Losses

Historical losses were determined for drought, flooding, coastal storms (hurricanes/tropical storms/nor'easters), tornadoes/windstorms, lightning strike, and winter storms from NCEI, USDA RMA, and the NFIP. NCEI reports include property and crop damage estimates. However, as noted in the hazard profiles, many of the events have no damages reported. This does not mean that there were no damages; rather, it indicates that no damages were reported to NCEI. As a result, these should be considered low-end estimates of losses. The flood and flash flood events reported in NCEI list more than \$240,000 million in property damage since 2010. There have been over 80 events reported to NCEI due to winter storms since 2010, although in most events, damages were not provided. Since 2010, windstorm and tornado events resulted in more than \$50.5 million in property damages and one injury reported to NCEI. There were no damages, deaths, or casualties reported for extreme temperatures, coastal storm events, or wildfires in the NCEI database (NCEI, 2024).

Although agriculture is a relatively small part of Venango County's economy (representing just 0.1% of the County's share of primary jobs) up to \$9 million of annual crop sales would potentially be at risk to the previously aforementioned storm events (US Census Bureau, 2020; USDA, 2020). Within all crop loss, roughly 59% of all crop failures in Venango County were due to drought (EWG, 2024).

The flood hazard vulnerability assessment for the County focuses on community assets that are located in the 1%-annual-chance floodplain. While greater and smaller floods are possible, information about the extent and depths for this floodplain is available for all municipalities countywide, thus providing a consistent basis for analysis.

Of the 31 municipalities in Venango County, 28 municipalities have flood prone areas. The streams prone to flooding include Chub Run, Oil Creek, Sage Run, Morrison Run, Sugar Creek and the Allegheny River. The main flood season is usually December through April.

4.4.2.2. Current Condition Losses

The current condition losses were derived using the total assessed value, including land and building values, from the Venango County Tax Assessment Database. Table 4.4.2.2-1 details the total assessed values by municipality and type of land. Please note, the data received from Venango County attributed values for buildings and land by parcels. If there was more than one structure on one parcel, then the values would be increased by the number of structures on the parcel; this may inflate the total assessed value, though this was not a common occurrence.

Table 4.4.2.2-1: Venango County Tax Assessed Building Values

Municipality	Agriculture	Commercial	Industrial	Residential	Utility	Vacant	Total
Allegheny Township	\$9,108,660	\$1,129,510	\$60,920	\$6,333,370		\$4,993,380	\$21,625,840
Barkeyville Borough	\$1,608,160	\$15,480,730	\$872,520	\$4,570,920	\$17,750	\$1,281,070	\$23,831,150
Canal Township	\$18,760,590	\$2,348,840		\$17,617,510	\$20,180	\$4,244,420	\$42,991,540
Cherrytree Township	\$29,465,880	\$7,155,260	\$3,658,920	\$27,323,610	\$26,020	\$8,358,410	\$75,988,100
Clinton Township	\$17,333,700	\$2,868,290	\$662,840	\$16,596,890		\$5,775,440	\$43,237,160
Clintonville Borough	\$766,370	\$3,671,640	\$138,660	\$7,071,190	\$40,320	\$451,080	\$12,139,260
Cooperstown Borough	\$236,750	\$1,333,480		\$10,996,200	\$24,880	\$199,460	\$12,790,770
Cornplanter Township	\$9,588,100	\$10,351,800	\$1,620,800	\$70,161,140	\$113,070	\$10,457,130	\$102,292,040
Cranberry Township	\$47,159,680	\$113,159,110	\$4,515,370	\$172,725,110	\$151,570	\$20,897,050	\$358,607,890
Emlenton Borough		\$10,168,060	\$20,080	\$17,789,370	\$192,010	\$305,320	\$28,474,840
Franklin City	\$1,154,010	\$90,377,410	\$11,677,730	\$130,419,370	\$544,200	\$2,278,860	\$236,451,580
Frenchcreek Township	\$24,921,020	\$3,050,670		\$36,645,760	\$1,600	\$7,526,860	\$72,145,910
Irwin Township	\$26,756,130	\$9,326,660	\$394,360	\$24,836,000	\$223,880	\$6,152,490	\$67,689,520
Jackson Township	\$17,476,320	\$1,917,950	\$96,360	\$18,581,560	\$580	\$5,372,140	\$43,444,910
Mineral Township	\$11,856,190	\$611,010		\$9,168,840	\$136,820	\$5,327,630	\$27,100,490
Oakland Township	\$26,654,340	\$9,930,940	\$916,120	\$30,310,240		\$4,848,570	\$72,660,210
Oil City	\$899,710	\$149,098,500	\$7,082,710	\$167,099,450	\$1,920,380	\$2,721,780	\$328,822,530
Oil Creek Township	\$10,615,310	\$2,763,050	\$977,300	\$18,601,870	\$140,170	\$7,213,310	\$40,311,010

Venango County 2025 Hazard Mitigation Plan Update

Pinegrove Township	\$26,665,540	\$3,447,380	\$182,650	\$24,440,530	\$25,970	\$8,332,340	\$63,094,410
Pleasantville Borough	\$528,130	\$9,149,780	\$475,990	\$19,704,250	\$280,610	\$526,290	\$30,665,050
Plum Township	\$21,119,330	\$1,536,130	\$51,670	\$15,898,320		\$5,834,730	\$44,440,180
Polk Borough	\$732,130	\$72,355,530		\$8,429,740		\$281,090	\$81,798,490
President Township	\$6,519,610	\$707,570		\$32,805,640	\$2,310	\$8,027,310	\$48,062,440
Richland Township	\$18,437,460	\$2,458,460	\$734,690	\$13,208,470	\$119,230	\$4,105,810	\$39,064,120
Rockland Township	\$25,407,450	\$3,322,240	\$4,687,000	\$62,313,230	\$59,580	\$16,390,850	\$112,180,350
Rouseville Borough	\$123,050	\$2,096,660	\$2,163,400	\$7,687,510	\$18,820	\$211,870	\$12,301,310
Sandycreek Township	\$13,565,960	\$24,302,810	\$10,295,050	\$73,675,480	\$199,150	\$5,277,220	\$127,315,670
Scrubgrass Township	\$20,950,060	\$3,869,330	\$7,905,410	\$37,942,430		\$5,815,960	\$76,483,190
Sugarcreek Borough	\$20,726,690	\$66,323,820	\$13,313,790	\$114,266,460	\$259,130	\$9,011,560	\$223,901,450
Utica Borough	\$1,316,410	\$923,840		\$4,165,080		\$596,320	\$7,001,650
Victory Township	\$7,550,660	\$2,795,200	\$9,260	\$10,923,430		\$4,616,160	\$25,894,710
Total	\$418,003,400	\$628,031,660	\$72,513,600	\$1,212,308,970	\$4,518,230	\$167,431,910	\$2,502,807,770

4.4.2.3. Predictive Losses

This 2025 Plan Update employed an enhanced Hazus analysis for floods. As opposed to basic analysis using only default data, enhanced analysis incorporates both up-to-date and specific data for inclusion in the hazard models. The enhanced data incorporated into this HMP include:

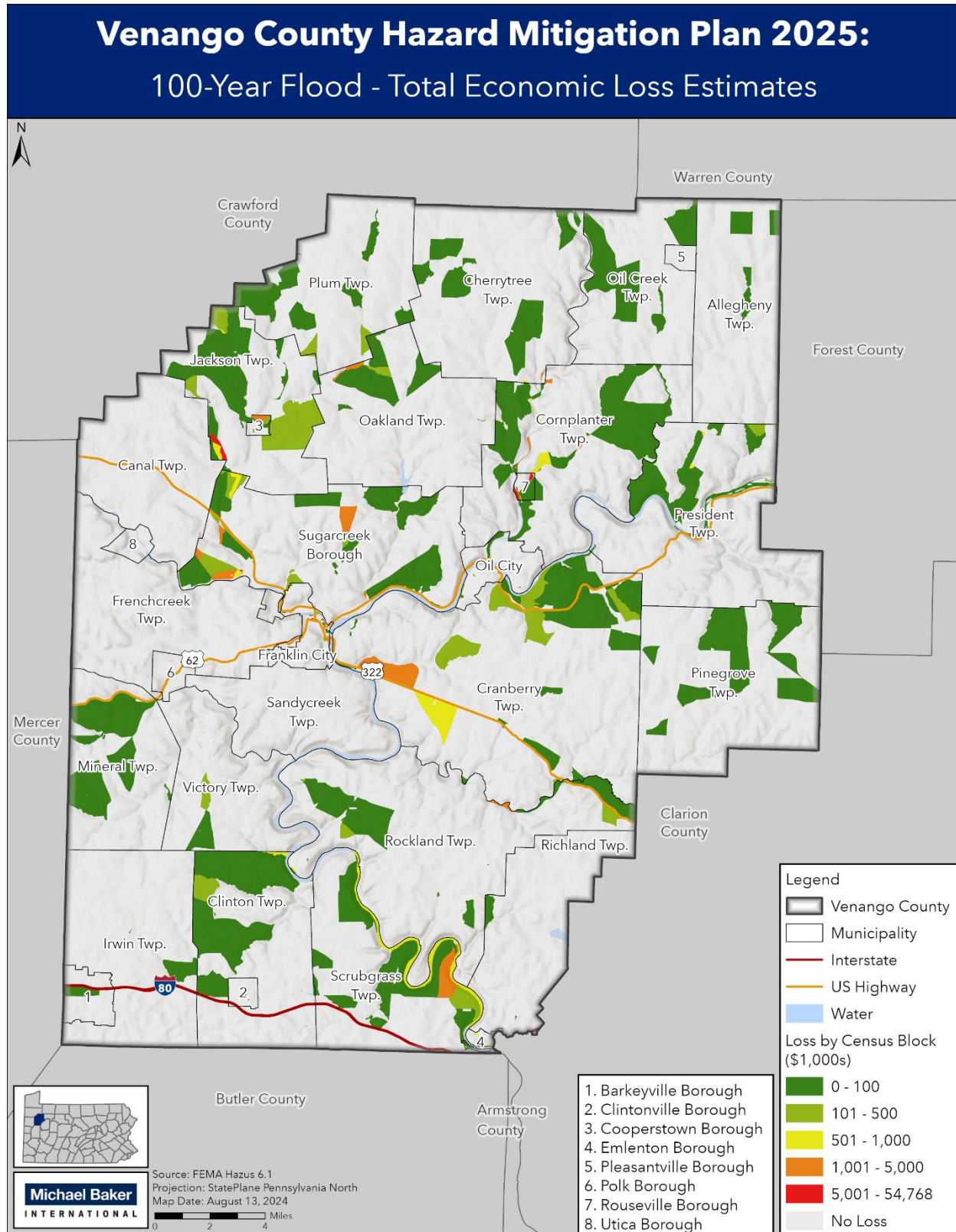
- Demographic data from the 2020 Census
- Updated critical facilities data from the County
- Dasymetric Census blocks to better attribute areas of population geographically within the block
- A user-delineated 100-year depth grid derived for Venango County from the effective FIRM data.

For more details on the HAZUS methodology used and additional results reports, see [Appendix F - HAZUS Methodology and Results Report](#).

Using these datasets in Hazus-MH Version 6.1, total economic losses from a 1-percent-annual-chance flood in Venango County are estimated at \$264.74 million attributed to business interruption and building loss. Residential occupancies make up \$90 million of the total estimated building-related losses, and commercial buildings make up \$93 million. According to the model, the only critical facility expected to experience damage is a school.

Figure 4.4.2.3-1 shows the distribution of building-related losses by census block across Venango County. The areas with the highest potential losses are along U.S. Route 322, the rivers running through the county, and there is one high loss potential in Jackson Township.

Figure 4.4.2.3-1: 100-Year Flood - Total Economic Loss Estimates



4.4.3. Future Development and Vulnerability

Risk and vulnerability to natural and human-made hazard events are not static. Risk will increase or decrease as counties and municipalities see changes in land use and development as well as changes in population.

Venango County has a few risks and vulnerabilities when it comes to hazard events. First, Venango County has a high proportion of elderly residents. As noted in [Section 2.3](#), 23.7% of the population in Venango County is over 65 years old, compared to 19.6% all of Pennsylvania's population is over 65 years old. Older adults are more vulnerable to hazards such as extreme weather, flooding, and power outages due to mobility issues, medical needs, and potential social isolation. Information is often spread about warning of hazards and events through social medias and platforms that the aging population may not be familiar with.

Another vulnerability Venango County experiences is economic hardship. The county has experienced economic decline due to deindustrialization, leading to higher poverty rates. The median household income is \$59,278 in Venango County compared to the \$73,170 median in Pennsylvania. Lower-income residents may struggle with disaster preparedness, recovery, and access to resources.

4.4.3.1. Community Survey

As previously mentioned in section [3. Planning Process](#), community-wide public participation survey was conducted to help understand the on-the-ground conditions and concerns of Venango County residents, therefore supporting the assessment of hazard risk and mitigation opportunities in the County. The survey asked respondents two types of questions: mitigation activities completed within the household and hazard concerns. The survey was posted on the Venango County HMP Website (<https://www.pennsylvaniahmp.com/venango-hmp>).

The survey intended to solicit public input regarding the understanding of hazard risk, which was posted to the website, and was also shared with communities to post to their social media accounts. See Figure 4.4.3.1-1 for an example of the HMP website post. The survey received over 80 responses.

Figure 4.4.3.1-1: Public Participation Survey from HMP Website



The survey reveals that residents of Venango County perceive their community's preparedness for natural disasters as moderate, with an average rating of 4.72 out of 10. This suggests a general sense of vulnerability and a need for improved disaster readiness at the community level.

The most frequently experienced hazards over the past decade include winter storms, utility interruptions, hailstorms, droughts, and windstorms. Similarly, the most feared hazards are winter storms, utility interruptions, transportation accidents, and flooding-related events. These concerns highlight the region's exposure to severe weather and infrastructure vulnerabilities.

In terms of household preparedness, many respondents reported taking proactive steps such as completing first aid/CPR training, creating emergency plans, storing supplies, and installing safety equipment. However, the data also shows that only a small number of households have taken comprehensive preparedness measures, indicating room for improvement in personal readiness.

Respondents voiced several concerns and suggestions. These include the lack of accessible resources, inadequate municipal hazard planning, and infrastructure weaknesses such as outdated power grids and insufficient stormwater management. Some residents also expressed a desire for better communication systems, more visible emergency planning, and support for vulnerable populations.

The demographics of respondents live or work in Venango County with ages ranging from 18 to over 65 years old. 88.6% live in a single-family home and 78.2% of the respondents own their home. The most common ways to receive information concerning hazards or disaster are social media, police/fire/EMS, and the Venango County website. Most of the respondents were either possibly interested or definitely interested in attending public education training relating to risk and preparedness.

5. CAPABILITY ASSESSMENT

5.1. UPDATE PROCESS SUMMARY

The purpose of the Capability Assessment is to identify strengths and weaknesses that will affect the ability of the County and participating jurisdictions to implement mitigation actions. It is important to perform a mitigation capability assessment in order to develop a comprehensive and implementable mitigation strategy. Capabilities include a variety of regulations, existing planning mechanisms, and administrative capabilities provided through established agencies or authorities. This assessment will allow Venango County to better evaluate its current resources to implement its mitigation strategy to address the potential hazards which make the County and its local municipalities vulnerable. While the capability assessment serves as a good instrument for identifying local capabilities, it also provides a means for recognizing gaps and weaknesses that can be resolved through future mitigation actions. The results of this assessment lend critical information for developing an effective mitigation strategy.

The 2010 HMP identified the presence of local plans, ordinances, and codes in each municipality. It also specified local, state, and federal resources available for mitigation efforts. Through responses to the Capability Assessment Survey distributed to all municipalities and input from the HMSC, the 2010 HMP provided an updated inventory of the most critical local planning tools available and a summary of the fiscal and technical capabilities available through programs and organizations outside of the County. It also identified emergency management capabilities and the processes used for administering the NFIP. The 2015 HMP provided an update to the 2010 findings, through data collected from the County and participating municipalities. The 2020 Capability Assessment provided an updated inventory of local planning and regulatory tools available, a summary of fiscal and technical capabilities, and discussed opportunities to integrate the HMP into other plans and programs to promote implementation. This 2025 update does the same.

To accomplish this, a number of documents were reviewed as part of this Plan Update. While some information has been derived from the 2015 and 2020 Plans and updated where applicable, additional documents have been identified and reviewed for purposes of integration into other local planning mechanisms. Several plans and ordinances at the County and municipal levels were reviewed, and a summary of options to integrate the data, information, and hazard mitigation goals and actions into other planning mechanisms is provided. Assessment forms were distributed to all municipalities for them to report on their current capabilities. The rest of this section will highlight capabilities but is not meant to be an exhaustive list. A total of 19 stakeholders from the HMPT submitted the 2025 form and 18 in 2020. Returned assessment forms can be found in [Appendix C](#).

The Mitigation Strategy, including the goals and actions, should be incorporated into relevant planning mechanisms based on their pertinence and relevance to specific plans and ordinances. For example, all structural projects should be included in the Capital Improvement Program. Land use and zoning related projects should be incorporated into the next update of the Community's Comprehensive Plan and Zoning Ordinance through collaboration with Planning and Zoning departments. Likewise, information from relevant planning documents was used to inform and update the Hazard Mitigation Plan. A general list of relevant plans and documents and corresponding areas for incorporation are listed below:

Table 5.1-1: Relevant Departments and Documents	
RELEVANT DOCUMENTS	HAZARD MITIGATION PLANNING ELEMENTS
Comprehensive Plan/Land Use Plan, Zoning/Subdivision Regulations, Floodplain Ordinance	Demographic data, land use, development trends, and floodplain management information
Stormwater Management Plan, Sediment and Erosion Control Plan, Long Range Transportation Plan	Stormwater management and infrastructure data and projects
Evacuation Plan, Emergency Operations/Response Plan	All-hazards information for evacuation, response, and recovery
Climate Action Plan, Dam Safety Regulations	Risk and vulnerability data, and storm/floodwater management
Recreation and Greenway Plan	Land preservation strategies

5.2. CAPABILITY ASSESSMENT FINDINGS

Venango County and participating jurisdictions have a wide variety of plans, tools, and resources in place to support the goals of hazard mitigation planning, and the specific mitigation strategy presented in this HMP Update. Cooperstown Borough and President Township could use assistance to better understand their planning and regulatory capabilities and where the County provides support.

5.2.1 Planning and Regulatory Capability

The purpose of a plan/ordinance review as part of this planning process is trifold:

- To identify existing Commonwealth, Regional/County, and Municipal initiatives;
- To provide an inventory and review of sample plans and ordinances and identify sections in these documents that address hazard mitigation-related issues; and
- To provide a platform to integrate plans and other documents so recommendations and strategies are not in contradiction with one another (e.g., between the hazard mitigation plan and the comprehensive plan).

A review of current zoning and subdivision ordinances, comprehensive plans, open space and recreation plans, stormwater management plans, sediment and erosion control plans, and emergency operations plans, among others, are summarized below by level of administration (Commonwealth, Regional/County, and Municipal).

COMMONWEALTH OF PENNSYLVANIA DOCUMENT REVIEW

- The 2023 Pennsylvania State Hazard Mitigation Plan Update goals and objectives that are applicable to this Venango County Plan Update including (PEMA, 2023):
 - Protect lives, property, environmental quality, and resources of the Commonwealth;
 - Enhance consistent coordination, collaboration, and communications among stakeholders;
 - Provide a framework for active hazard mitigation planning and implementation; and
 - Increase awareness, understanding, and preparedness across all sectors.

Hazard identification and risk assessment data from the 2023 Pennsylvania State Hazard Mitigation Plan Update has been incorporated into the appropriate sections of this Plan Update.

- **The Uniform Construction Code (UCC)** is the statewide building code (Act 45 of 1999) that took effect in Pennsylvania in April of 2004 and was amended most recently in 2018. The UCC is mandated by the State for all municipalities in Pennsylvania and establishes minimum regulations for most new construction, including additions and renovations to existing structures. All new construction is required to meet the UCC requirements statewide. On October 26, 2022, the Commonwealth Court issued an opinion that ceased enforcement of 2021 accessibility standards, meaning all structures must comply with the 2018 accessibility requirements (Department of Labor & Industry, n.d.). All 31 municipalities in Venango County have since adopted these **building codes** (see Commonwealth of Pennsylvania Document Review, Bullet "B"). Residential construction in Venango County is also regulated by the **International Residential Code (IRC)**, which was most recently updated in 2021. The IRC regulates the construction, alteration, movement, enlargement, replacement, repair, renovation, and demolition of one- or two-family dwellings and townhouses not more than three stories above grade in height. Building codes relate to hazard mitigation through requirements about building materials and methods that have been professionally evaluated for quality and safety, as well as inspection requirements. Municipalities have the option to adopt more stringent requirements that enhance resistant or resilience building design practices.

- The **Commonwealth of Pennsylvania Governor’s Executive Order 1999-1 (Land Use Planning)** provides the basis for the requirement to integrate hazard mitigation into comprehensive land use planning. As part of this executive order, the Interagency Land Use Team was established, comprising the following state agencies: Department of Agriculture; Department of Community and Economic Development; Department of Conservation and Natural Resources; Department of Environmental Protection; Governor’s Green Government Council; Fish and Boat Commission; Game Commission; Department of Transportation; and PEMA. One of the most significant outcomes of PEMA’s participation on the team is the integration of hazard mitigation goals and objectives into comprehensive land use planning processes.
- **The Pennsylvania Erosion and Sediment Control Code** requires all earthmoving projects in the Commonwealth to develop an erosion and sediment pollution control plan to ensure that proper site development practices are employed for land development and implement best management practices for the control of sediment pollution during construction. Pennsylvania DEP requires a National Pollution Discharge Elimination System (NPDES) permit for earthmoving activities exceeding one acre. As well as erosion and sediment pollution control during construction, the permit also addresses post-construction stormwater management.
- **Act 165: Hazardous Materials Emergency Planning and Response Act**, amended in 2001, established a statewide hazardous materials safety program. This created the Hazardous Materials Response Fund, county Hazardous Material Emergency Response Accounts, and further provided duties to PEMA and the Pennsylvania Emergency Management Council. This Act requires facilities with extremely hazardous chemicals on site to create Off-site Emergency Response Plans, which are then presented to Local Emergency Planning Committees.

REGIONAL/COUNTY DOCUMENT REVIEW

Comprehensive Plan

A comprehensive plan is a policy document that states objectives and guides the future growth and physical development of a municipality. The comprehensive plan is a blueprint for housing, transportation, community facilities, utilities, and land use. It examines how the past led to the present and charts the community’s future path. Pennsylvania’s MPC (Act 247 of 1968), as reauthorized and amended, requires counties to prepare and maintain a county comprehensive plan and to update it every 10 years. Local municipalities may prepare, but are not required by the MPC to prepare, a comprehensive plan.

With regard to hazard mitigation planning, Section 301(a)2 of the MPC requires comprehensive plans to include a plan for land use, which, among other provisions, suggests that the Plan give consideration to floodplains and other areas of special

hazards and other similar uses. The MPC also requires comprehensive plans to include a plan for community facilities and services and recommends considering storm drainage and floodplain management.

- **The County Comprehensive Plan Update for Venango County** was finalized in October 2024. This comprehensive plan serves as a blueprint for the County's goals and objectives for the future, and its timeliness was ideal with the HMP Update. The HMP along with the Comprehensive Plan assist County departments, municipalities, agencies, businesses, and residents to align their resources, funding, and actions to create a stronger and competitive Venango County. Rockland Township recognizes the Plan assists with long-term planning for guiding development and community projects.
 - The plan includes two volumes: Volume 1: Topics, Priorities, Goals, and Actions and Volume 2: Community Survey and Engagement Summaries. Section 1: "Where We Are" was referenced to develop **Section 2: Community Profile** of the HMP. Population data from the Center for Rural Pennsylvania projects that the County's population will continue to decrease through 2050 at an estimated 45,041. It is possible that development will not increase with a declining population, and better analysis can be done to avoid vulnerable areas for development.
 - Volume 1 also emphasized the importance of economic development - businesses and jobs, community empowerment and revitalization, and recreation and tourism. Municipal actions to further zoning, planning, and investment doctrine can align with the County's goals regarding economic development. In addition to the I-80 Interchange Corridor and Route 8 Corridor, vacancies and blights are targeted for economic redevelopment. Often vacant buildings and blighted areas, including housing, are at risk for structural collapses and urban fires. Improving public transit to provide more options for students and employees can reduce reliance on private car ownership and possibly fewer transportation incidents. Public transit should avoid, if possible, areas with critical facilities that could be targets for civil disturbance, terrorism, or environmental hazard releases.
 - One of the County's Comprehensive Plan goals is to encourage upper-story development that is code compliant. This goal not only prevents sprawl but limits construction in vulnerable areas. In addition, many actions in the HMP align with preserving water resources, parks, and natural areas directed for recreation and tourism.
 - The County Comprehensive Plan acknowledges the young and aging-in-place community like the HMP. The Comprehensive Plan establishes actions to support the population via transportation access to senior centers and other senior used resources, keeping the community active, increasing housing, promoting routine home maintenance programs, and

improving Digital Literacy. These actions all provide more resources to the population and improve the communication of hazard related information. The Plan also identifies actions to expand affordable childcare options and new childcare centers and programs. Newly constructed childcare centers and program locations need to be documented in the critical facilities list of the HMP.

- Like the HMP's efforts to incorporate equity planning, the Comprehensive Plan lists actions to support underserved communities, such as broadband internet and transportation to clinics.
- Lastly, the Comprehensive Plan notes local programs with the public at all ages and with community leaders, local law enforcement, fire department, and public safety will create a multi-general community. These programs can include the educating on hazard mitigation efforts that can be done at home or businesses, disaster relief, and emergency preparedness. Goal 3 of the Comprehensive Plan specifically calls out implementing recommendations of the current Emergency Management Plan and Hazard Mitigation Plan to ensure access to critical services and resources. Volume 2 presented responses to a County-wide survey on the most importance services and facilities. Fire protection, police protection, and health care and emergency services were in the top five. Followed by access to medical facilities/services, public sewer and water service, and flood protection within the top nine.
- Cherrytree Township developed a Comprehensive Plan in 1996. Sandycreek Township reported its Plan was developed in 2019, and an update is in progress. A Northern Venango County Multimunicipal Comprehensive Plan was developed in 2010 for Cornplanter Township, City of Oil City, and Rouseville Borough.
- The **Venango County Three-Year Community Development Plan** determines the needs of the County and its communities, and particularly, the needs of the County's low- to moderate-income households and persons. These needs are then incorporated into specific objectives, categorized as either short-term (one-year) or long-term (years two and three). These objectives assist the County in determining annual project selections, keeping in mind that all activities proposed in the meet the National Objectives laid out as part of the Community Development Block Grant program.
 - The document notes the comparative aging population (65 and over) as 18% of the County compared to 15% in the Commonwealth and 13% in the U.S. Additionally, in the northern areas of the country, there is a trend for retired citizens to migrate south for a more comfortable climate. Many of those in Venango County who have the means often take this option. However, those who do not have such resources are forced to remain in the community. This is not to say that all elderly citizens abandon their

home communities, but it is just another indication of the economic drain on the region.

In addition, figures depict a much higher percent of populations below the poverty level compared to Pennsylvania. However, this percent has declined since 2014 from 16% of persons to 14% in 2019. Families have also decreased from close to 12% in 2014 to 9% in 2019 (see Figure 5.2-1).

Figure 5.2-2: County Community Development Plan Poverty Status

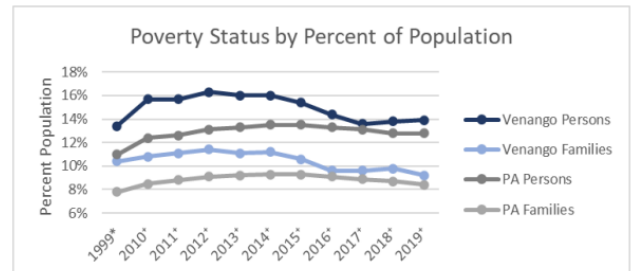


Figure 1. Comparative poverty percentage (Sources: *US Census 2000, *ACS 5-Year Estimate)

- Hazard mitigation related efforts include identified sewer, water, facility services for the elderly such as handicapped accessibility and senior centers, and streets. These objectives such as, supporting projects that will address blighted and vacant homes and/or properties within core communities and along transportation corridors to strengthen the County housing stock and positively impact home values within the County, have been incorporated in [Section 6: Mitigation Strategy](#).

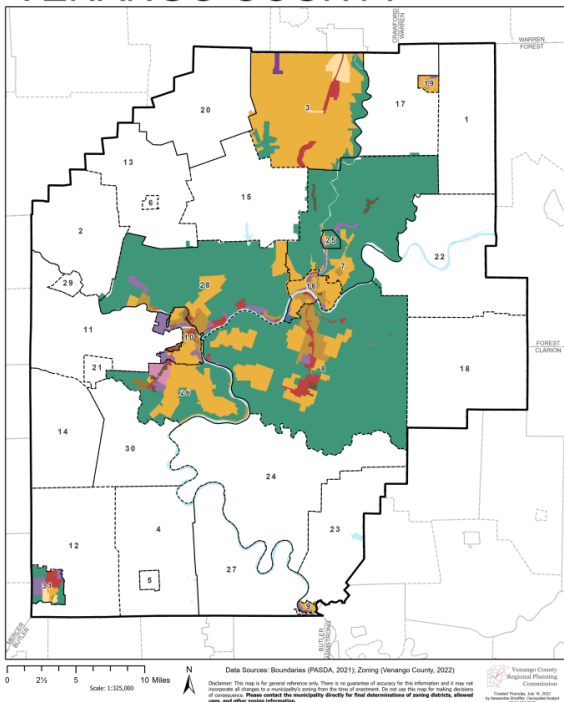
Subdivision and Land Development Ordinances

Subdivision and land development ordinances are intended to regulate the development of housing, commercial, industrial, or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Within these ordinances, guidelines on how land will be divided, the placement and size of roads and the location of infrastructure can reduce exposure of development to hazard events.

- The **SALDO** applies to all municipalities in the County, but the following municipalities have additional planning or zoning boards requiring consultation.
 - Barkeyville Borough
 - Cherrytree Township
 - Cornplanter Township
 - Cranberry Township
 - Emlenton Borough
 - City of Franklin
 - City of Oil City
 - Pleasantville Borough

- Rouseville Borough
- Sandycreek Township
- Sugarcreek Borough

Figure 5.2-2: Venango County
Municipal Zoning Summary
VENANGO COUNTY MUNICIPAL ZONING SUMMARY



The **Venango County SALDO** is dated 2011. There are municipalities within the county which have adopted zoning ordinances. The County recognizes the need to consolidate the information to make informed development and regulatory decisions. Unfortunately, each municipality has adopted varying language for each zone, but a **Municipal Zoning Summary** (see **Figure 5.2-2**) has been developed by the County Regional Planning Commission to generalize zoning.

Allegheny Twp. reported its municipal officials have reviewed regulations to make sure that adequate zoning regulations are in place to reduce development in high hazard areas. This is an action that most municipalities across Venango County are tracking in their mitigation action plan.

Floodplain Management Ordinances

After FEMA provides a municipality with regulatory flood hazard information, they are required to adopt a floodplain ordinance that meets or exceeds the minimum NFIP requirements in order to participate in the NFIP. The purpose of these overriding regulations is to ensure that participating communities take flood hazard data into account when acting on land use and management. The County provides FEMA's suggested model ordinance on its website along with information on floodplain permitting, Risk Rating 2.0, and links to the National Flood Hazard Layer interactive map, municipal assistance programs, and a variety of resources.

Standardized Zoning Color Key

Rural Residential (5)
Low-Density Residential (54)
Medium-Density Residential (30)
High-Density Residential (12)
Mixed Use (16)
Commercial (53)
Business (12)
Industrial (34)
Major Impact Facilities (1)
Civic/Health/Institutional (1)
Conservation (19)

Document Layout

Standardized Zone Name (Count)
MUNICIPALITY
Code used in the data layer
"Quoted language from the zoning ordinance."

Municipal Districts (Labeled)

1 Allegheny Township	16 City of Oil City
2 Canal Township	17 Oilcreek Township
3 Cherrytree Township	18 Pinegrove Township
4 Clinton Township	19 Pleasantville Borough
5 Clintonville Borough	20 Plum Township
6 Coopertown Borough	21 Polk Borough
7 Cornplanter Township	22 President Township
8 Cranberry Township	23 Richland Township
9 Emlenton Borough	24 Rockland Township
10 City of Franklin	25 Rouseville Borough
11 Frenchcreek Township	26 Sandycreek Township
12 Irwin Township	27 Scrubgrass Township
13 Jackson Township	28 Sugarcreek Borough
14 Mineral Township	29 Utica Borough
15 Oakland Township	30 Victory Township
	31 Barkeyville Borough

- It is the responsibility of municipalities within the County to maintain and enforce their own floodplain ordinances. The county

acts as administrative assistance. In Venango County, this currently includes the following municipalities.

- Allegheny Township
- Barkeyville Township
- Canal Township
- Clinton Township
- Clintonville Borough
- Cooperstown Borough
- Cornplanter Township
- Cranberry Township
- Emlenton Borough
- Frenchcreek Township
- Irwin Township
- Mineral Township
- Oakland Township
- Oilcreek Township
- Oil City, City of
- Pinegrove Township
- Plum Township
- Polk Borough
- President Township
- Richland Township
- Rockland Township
- Rouseville Borough
- Sandycreek Township
- Scrubgrass Township
- Sugarcreek Borough
- Utica Borough
- Victory Township
- Cherrytree Township shares its zoning regulations and map and floodplain ordinances on its website. Zoning permits are available on the website for submittal. For Sandycreek Township, Venango County Planning Commission handles floodplain the compliance/permitting, and the Township handles floodplain zoning and floodplain enforcement.

Stormwater Management Plan or Ordinance

The proper management of stormwater runoff can improve conditions and decrease the chance of flooding. The Pennsylvania legislature enacted the Stormwater Management Act (Act 167 of 1978), commonly called Act 167, requiring counties to develop stormwater management plans for designated watersheds. This planning effort results in sound engineering standards and criteria being incorporated into local codes and ordinances to manage stormwater runoff from new development in a coordinated, watershed-wide approach. Without such planning, stormwater is either not controlled by municipal ordinances, or is addressed on a site-by-site or municipal boundary basis. Municipalities within the same watershed may require different levels of stormwater control. The result is often the total disregard of downstream impacts or the compounding of existing flooding problems.

Act 167 Stormwater Management Plans are intended to improve stormwater management practices, mitigate potential negative impacts from future land uses, and improve the condition of impaired waterways. This type of plan provides local ordinances that incorporate standards and criteria to manage and maintain peak runoff flows throughout the combined watersheds as development occurs. Also, it is not the intent of this plan to solve existing flooding or runoff problems, but to identify for future correction and assure problems do not get worse. More specifically, this plan does not require municipalities to correct existing drainage problems.

- The [Venango County Stormwater Management Plan](#) is dated June 22, 2010.
- Venango County currently administers stormwater for the following municipalities.
 - Allegheny Township
 - Canal Township
 - Clinton Township
 - Clintonville Borough
 - Cooperstown Borough
 - Cornplanter Township
 - Cranberry Township
 - Emlenton Borough
 - Frenchcreek Township
 - Irwin Township
 - Jackson Township
 - Mineral Township
 - Oakland Township
 - Oilcreek Township
 - Pinegrove Township
 - Plum Township

- Polk Borough
- President Township
- Richland Township
- Rockland Township
- Rouseville Borough
- Scrubgrass Township
- Sugarcreek Borough
- Victory Township

Municipalities have an obligation to implement the criteria and standards developed in each watershed stormwater management plan by amending or adopting laws and regulations for land use and development. The implementation of stormwater management criteria and standards at the local level is necessary, since municipalities are responsible for local land use decisions and planning. The degree of detail in the ordinances depends on the extent of existing and projected development. Municipalities within rapidly developing watersheds will benefit from the watershed stormwater management plan and will use the information for sound land use considerations. A watershed stormwater management plan is designed to aid the municipality in setting standards for the land uses it has proposed. A major goal of the watershed plan and the attendant municipal regulations is to prevent future drainage problems and avoid the aggravation of existing problems.

- Cherrytree Township shares its stormwater management plan and ordinances on its website.
- Rockland Township requires higher regulatory standards for property at a greater risk of flooding and reduces losses associated with flooding.
- Utica Borough has requirements for new construction in a floodplain to provide proper permitting, minimize flood damage, and to protect the water supply and natural drainage.

Climate Action Plan

The **Crawford Area Transportation Authority (CATA)** developed a **Climate Action Plan (CAP)** in 2022 for Crawford and Venango Counties. Rural communities play a role in global climate mitigation efforts. CATA strives to be a leader not just in rural transit but in sustainability, expansion of mobility, and stewards of the communities. CATA has aggressively built partnerships at the local, state, and national level to address climate issues within traditional service model of public transportation and beyond. These initiatives have led to the current reduction of Greenhouse Gas Emissions (GHG) by over 24% since 2017. The Climate Action Plan identifies goals and actions to mitigate changes in climate, reduce reliance on personal vehicles, and above all educate rural communities involved in climate policy.

Emergency Management

In Pennsylvania, Emergency Management begins at the municipal level, as required by the PA Emergency Management Service Code. Every county, city, borough, and township in the Commonwealth is required to have an emergency management coordinator selected by the elected officials of the jurisdiction. The ultimate responsibility for Emergency Management always rests with the chief elected officials and governing body, however the Emergency Management Coordinator's role is to develop plans, conduct training, and coordinate all available resources in the community pre- and post-disaster.

- In Venango County Emergency Management is a comprehensive, integrated program of mitigation, preparedness, response, and recovery for all types of emergencies and disasters.
- All municipalities in Venango County identified having an Emergency Management Coordinator, however for many municipalities this person held one or more other positions such as Mayor, Municipal Manager, Secretary, Treasurer, and Engineer or was in the Fire or Police Department.
- Table 5.2-1 details the planning and regulatory capabilities of all municipalities per the above sections. The HMP column is based on municipal participation and adoption in the **2020 HMP**. As of the HMP Update for 2025, all municipalities have met participation requirements and will be permitted to adopt.

Table 5.2-1: Venango County Planning & Regulatory Capabilities

MUNICIPALITY	COMPREHENSIVE PLAN	BUILDING CODE	SUBDIVISION & LAND DEVELOPMENT ORDINANCE	ZONING ORDINANCE	STORMWATER MANAGEMENT PLAN OR ORDINANCE	HAZARD MITIGATION PLAN
Allegheny Township	X	X	County SALDO		X	
Barkeyville Borough	X	X	County SALDO	X		
Canal Township	X	X	County SALDO		X	
Cherrytree Township	X- 1996	X	County SALDO	X	X	X
Clinton Township	X	X	County SALDO		X	X
Clintonville Township	X	X	County SALDO		X	
Cooperstown Borough	X	X	County SALDO		X	
Cornplanter Township	X	X	County SALDO	X	X	X
Cranberry Township	X	X	County SALDO	X	X	X
Emlenton Borough	X	X	County SALDO	X	X	X
City of Franklin	X	X	County SALDO	X	X	X
Frenchcreek Township	X	X	County SALDO		X	
Irwin Township	X	X	County SALDO		X	X
Jackson Township	X	X	County SALDO		X	
Mineral Township	X	X	County SALDO		X	
Oakland Township	X	X	County SALDO		X	
City of Oil City	X	X	County SALDO	X	X	X
Oil Creek Township	X	X	County SALDO		X	
Pinegrove Township	X	X	County SALDO		X	
Pleasantville Borough	X	X	County SALDO	X		X
Plum Township	X	X	County SALDO		X	X
Polk Borough	X	X	County SALDO		X	X
President Township	X	X	County SALDO		X	
Richland Township	X	X	County SALDO		X	X
Rockland Township	X	X	County SALDO		X	X

Table 5.2-1: Venango County Planning & Regulatory Capabilities

MUNICIPALITY	COMPREHENSIVE PLAN	BUILDING CODE	SUBDIVISION & LAND DEVELOPMENT ORDINANCE	ZONING ORDINANCE	STORMWATER MANAGEMENT PLAN OR ORDINANCE	HAZARD MITIGATION PLAN
Rouseville Borough	X	X	County SALDO	X	X	X
Sandycreek Township	X	X	County SALDO	X		
Scrubgrass Township	X	X	County SALDO		X	
Sugarcreek Borough	X	X	County SALDO	X	X	
Utica Borough	X	X	County SALDO			
Victory Township	X	X	County SALDO		X	

Local Emergency Planning Committee (LEPC)

Effective partnerships are created in advance of a disaster by the Emergency Management Coordinator through the development of a proactive, comprehensive emergency operations plan and other planning, training, and exercise programs. Venango County also runs a program to proactively plan for, and be prepared for, all-hazards: LEPC. The LEPC was established in compliance with SARA Title III (Emergency Planning and Community Right-to-Know Act of 1986). Composed of business leaders, environmental groups, public safety, medical and health, human/social services agencies and departments, the LEPC's primary agenda is to develop plans and programs to mitigate the effects of hazardous material releases in the community.

During a disaster, response and recovery efforts are coordinated from an Emergency Operations Center that is staffed by paid and volunteer personnel and representatives from all emergency service departments and agencies involved in operations. When two or more municipalities are involved in a disaster, the county can assume overall emergency coordination. When two or more counties are involved in a disaster, the state can assume overall coordination. When two or more states are involved in a disaster, the federal government can assume overall coordination. The responsibility and authority for emergency management always lies with the lowest level of government affected, and a unified incident command system is implemented that is all inclusive yet is never meant to usurp local authority.

- A meeting tailored to the LEPC was held on May 20, 2024 to kickoff the HMP Update. Details of this meeting can be found in [Appendix C – Meeting and Other Participation Documentation](#).
- The Venango County LEPC includes:
 - American Red Cross
 - AM Stabilizers
 - City of Franklin
 - Community Ambulance Services
 - County 911
 - County Airport
 - County Commissioners
 - County Department of Public Safety
 - County Sheriff's Department
 - Cranberry Township
 - DEP
 - DOH
 - EPA

- Franklin Fire Department
- Komatsu/Joy
- McCutcheon Waste Management
- National Fuel
- Oil City Fire Department
- PEMA
- Penelec
- PennDot
- Pepsi
- Pinegrove Volunteer Fire Department
- Rocky Grove Volunteer Fire Department
- Polk Center
- Scrubgrass Generating
- Sugarcreek Police
- The Derrick
- UPMC
- Webco

Emergency Action Plans

Emergency Action Plans address ways to safeguard lives and reduce property damage within the inundation area; procedures for effective dam surveillance; procedures for prompt notification of emergency management officials; warning and evacuation procedures; and emergency response actions that will be taken in the event of potential or imminent failure of the dam. Plans are typically prepared by dam owners and are reviewed by Venango County officials. Plans are not available to the public because they include sensitive information.

- Emergency Actions Plan have been prepared for high hazard dams located in Venango County as well as those for which the inundation area includes part of Venango County.

Emergency Operations Plan (EOP)

This plan prescribes emergency response coordination guidelines for the County, serving as an emergency management link between local municipalities and state government while incorporated the federal organizational concepts of the National Response Framework (NRF). The Emergency Management Services Code (PA Title 35) requires that all municipalities in the Commonwealth have a Local EOP which is reviewed every two years.

- The County Public Safety website includes listings for resources available from County assets.
- Barkeyville, Rouseville, and Sugarcreek Boroughs and Clinton and Cherrytree Townships noted an EOP in place. Cornplanter Township updated its in February 2024 and Emlenton Borough in March 2024.
- Frenchcreek and Sandycreek Townships anticipate approval of their EOP in 2025.
- Oil Creek Township and Pleasantville Borough noted its September 2020 EOP does not address all hazards identified in the HMP, but it identifies obstacles for response and recovery options that could be completed or alleviated by mitigation.

Emergency Response Agencies

There are four volunteer and three paid ambulances services that operate within Venango County, 19 volunteer and two paid fire departments, six municipal law enforcement agencies, and one state police department which provide twenty-four hours per day emergency response capabilities to the residents of Venango County.

Hazardous Material Response Team

Venango County operates a Hazardous Material Defensive Team which responds to hazardous materials incidents in Venango County. The team consists of 15 members trained in Operations Level and 3 Technician Level maintains one emergency response /communications vehicle. Venango County contracts with two private contractors; McCutcheon Enterprises Incorporated of Apollo, Pennsylvania.

Natural Resource Protection Plan

The PA DCNR Bureau of Forestry - Cornplanter and Clear Creek Forest Districts noted there are various forest management plans in place, particularly for public lands. Clear Creek Forest District has a District Resource Management Plan which includes the Kennderdell Tract. Oil Creek State Park has a current management plan as do all PGC Game lands. Two Mile Run County Park also has a forest management plan.

5.2.1.1. Participation in the National Flood Insurance Program

The Pennsylvania Floodplain Management Act (Act 166 of 1978) requires every municipality with flood hazard areas identified by FEMA to participate in the NFIP and permits all municipalities to adopt floodplain management regulations. It is in the interest of all property owners in the floodplain to keep development and land use within the scope of the floodplain regulations for their community. This helps keep

insurance rates low and makes sure that the risk of flood damage is not increased by property development.

FEMA Region 3 makes available to communities an ordinance review checklist which lists required provisions for floodplain management ordinances. This checklist helps communities develop an effective floodplain management ordinance that meets federal requirements for participation in the NFIP. The Pennsylvania Department of Community and Economic Development (DCED) provides communities with a suggested ordinance document to assist municipalities in meeting the minimum requirements of the NFIP and the Pennsylvania Flood Plain Management Act (Act 166), based on their 44 CFR 60.3 level of regulations. As new Flood Insurance Rate Maps (FIRMs) are published, the Pennsylvania State NFIP Coordinator at DCED works with communities to ensure the timely and successful adoption of an updated floodplain management ordinance by reviewing and providing feedback on existing and draft ordinances. In addition, DCED provides guidance and technical support through Community Assistance Contacts (CAC) and Community Assistance Visits (CAV).

As stated in Section 4.3.3.4, 29 of 351 municipalities in Venango County participate in the NFIP. Table 5.2-2 shows whether the municipality is participating in the NFIP, whether the municipality is in good standing, the number of policies they have, and the total amount of premium and coverage for each municipality.

Community	Participating	Initial FIRM Identified	Current Effective Map Date	Policies in Force	Total Premium and Coverage
Allegheny Township	Yes	01/17/75	1/16/2014	0	\$0
Barkeyville Borough	No	01/16/14	1/16/2014	0	\$0
Canal Township	Yes	02/06/91	1/16/2014	0	\$0
Cherrytree Township	Yes	01/01/87	1/16/2014	2	\$253,765
Clinton Township	Yes	09/10/84	1/16/2014	0	\$0
Clintonville Borough	Yes	09/10/84	1/16/2014	0	\$0
Cooperstown Borough	Yes	02/06/91	1/16/2014	4	\$313,2765
Cornplanter Township	Yes	05/19/87	1/16/2014	5	\$873,821
Cranberry Township	Yes	04/05/88	1/16/2014	19	\$2,632,861
Emlenton Borough	Yes	06/30/76	1/16/2014	0	\$0
City of Franklin	Yes	09/29/78	1/16/2014	19	\$6,426,461
French Creek Township	Yes	05/19/87	1/16/2014	3	\$542,226
Irwin Township	Yes	01/16/14	1/16/2014	0	\$0
Jackson Township	Yes	08/19/91	1/16/2014	9	\$1,162,508
Mineral Township	Yes	01/01/87	1/16/2014	1	\$70,447
Oakland Township	Yes	02/01/87	1/16/2014	1	\$350,380

Community	Participating	Initial FIRM Identified	Current Effective Map Date	Policies in Force	Total Premium and Coverage
City of Oil City	Yes	07/05/77	1/16/2014	23	\$9,207,212
Oil Creek Township	Yes	10/1/1986	1/16/2014	0	\$0
Pinegrove Township	Yes	09/10/84	1/16/2014	0	\$0
Pleasantville Borough	No	No Mapped SFHA	No Mapped SFHA	0	\$0
Plum Township	Yes	09/10/84	1/16/2014	1	\$350,859
Polk Borough	Yes	01/01/87	1/16/2014	10	\$1,129,089
President Township	Yes	02/06/91	1/16/2014	5	\$791,583
Richland Township	Yes	09/10/84	1/16/2014	0	\$0
Rockland Township	Yes	10/16/90	1/16/2014	3	\$366,646
Rouseville Borough	Yes	05/19/87	1/16/2014	7	\$387,751
Sandycreek Township	Yes	10/16/90	1/16/2014	2	\$448,943
Scrubgrass Township	Yes	08/05/91	1/16/2014	4	\$826,230
Sugarcreek Borough	Yes	05/19/87	1/16/2014	21	\$2,296,911
Utica Borough	Yes	03/04/91	1/16/2014	2	\$171,486
Victory Township	Yes	09/24/84	1/16/2014	0	\$0
Total				141	\$31,421,944

Since the 2020 plan update, there have been changes in the number of policies and total premiums and coverage for the county. In 2020, there were 200 policies in force across the County. There are currently 141 policies, a reduction of 59 policies. The total amount for premiums and coverage was \$34,604,971 in 2020. It has slightly dropped to \$21,421,944 in 2024, a reduction of \$3,183,027

For a community to participate in the NFIP, it must adopt and enforce floodplain management regulations that meet or exceed the minimum NFIP standards and requirements. These standards are intended to prevent loss of life and property, as well as economic and social hardships that result from flooding. Once FEMA provides communities with flood hazard information upon which floodplain management regulations are based, the community is required to adopt a floodplain ordinance that meets or exceed the minimum NFIP requirements. All NFIP participating communities in Venango County have either adopted a stand-alone ordinance or have arranged for County administration of floodplain regulations.

A total of 18 municipalities submitted the 2025 NFIP Survey, which is a significant increase from 2020 when only four municipalities submitted the survey

The Venango County Regional Planning Commission (VCRPC) offers a variety of services to member municipalities and their residents, some of which are at no additional cost. In municipalities with agreements, residents can contact the office about stormwater management and floodplain administration. The County's website also

provides a link to the Municipal Information Database for the County's most up-to-date information.

For communities that participate in the NFIP, substantial damage determinations are required by local floodplain management ordinances. These provisions must be in place for residents of a community to purchase flood insurance through the NFIP. The determination about whether a structure is "substantially damaged" is made at the local government level, generally by a building official or floodplain manager. Substantial damage applies to a structure in the SFHA for which the total cost of repairs is 50 percent or more of the structure's market value before the disaster occurred, regardless of the cause of damage. This percentage could vary among jurisdictions but must not be below NFIP standards. Preliminary damage assessments conducted by Venango County after a disaster can be used when making substantial damage determinations. If a building within the floodplain is determined to be substantially damaged after a disaster, it will need to be brought into compliance through methods such as elevating the structure and floodproofing utilities. This should be monitored by the local community in order to stay in compliance with the NFIP.

Higher standards adopted by municipalities such as freeboard requirements and addressing repetitive loss properties could be eligible for credit under the Community Rating System (CRS). The NFIP's CRS provides discounts on flood insurance premiums in communities that establish floodplain management programs that go beyond NFIP requirements. Under the CRS, communities receive credit for more restrictive regulations; acquisition; relocation, or flood-proofing of flood-prone buildings; preservation of open space; and other measures that reduce flood damage or protect the natural resources and functions in floodplains.

The CRS was implemented in 1990 to recognize and encourage community floodplain management activities that exceed the minimum NFIP standards. Section 541 of the 1994 Act amends Section 1315 of the 1968 Act to codify the CRS in the NFIP, and expands the CRS goals to specifically include incentives to reduce the risk of flood-related erosion and to encourage measures that protect natural and beneficial floodplain functions. These goals have been incorporated into the CRS, and communities now receive credit toward premium reductions for activities that contribute to them.

Under CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that meet a minimum of three of the following CRS goals:

- Reduce flood losses.
- Reduce damage to property.
- Protect public health and safety.

- Prevent increases in flood damage from new construction.
- Reduce the risk of erosion damage.
- Protect natural and beneficial floodplain functions.
- Facilitate accurate insurance rating.
- Promote the awareness of flood insurance.

There are 10 CRS classes that provide varied reduction in insurance premiums. Class 1 requires the most credit points and gives the largest premium reduction; Class 10 receives no premium reduction. CRS premium discounts on flood insurance range from 5 percent for Class 9 communities up to 45 percent for Class 1 communities. The CRS recognizes 18 creditable activities that are organized under four categories: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness.

Currently, no communities in Venango County participate in CRS.

Floodplain administration in Venango County is decentralized, with each municipality designating its own floodplain administrator as outlined in their respective ordinances. This means the specific individual or position responsible for overseeing floodplain management can vary across the County. Table 5.2-3: Floodplain Administration Information by Municipality lists these designated positions for each municipality in the column "Designated FPM". Additionally, the spreadsheet includes a column labeled "FPM Agreement," which identifies the municipalities that have entered into an agreement with the County for assistance in administering their floodplain ordinances. Through these agreements, the County provides support to ensure consistent and effective floodplain management in participating municipalities.

There is currently no Substantial Improvement/Substantial Damage (SI/SD) plan or procedure in place. This type of plan is important in floodplain management to determine when buildings must be brought into compliance with floodplain regulations after improvements or damage. It has been made an action in this plan to incorporate one in the next plan.

Table 5.2.1.1-1: Floodplain Administration Information by Municipality

Storm Water Management Plan	Municipality	NFIP Participation	FPM Agreement	Agreement Signed	Ordinance	Effective	Adopted	Pre-FIRM (=/= FBHM)	NFIP Enrollment Date	Designated FPM
X	Allegheny*	X	contract	13-Jul-2023	<u>01-13</u>	16-Jan-2014		9/10/1984	9/10/1984	Permit Officer (CCI) / Appointed Super.
X	Canal*	X	county signed	8-Oct-2013	<u>2013-1</u>	16-Jan-2014	†	2/6/1991	2/6/1991	Board Chairman
	Cherrytree	X	draft		<u>04-2023</u>	16-Jan-2014	†	1/1/1987	1/15/1987	Zoning Officer
X	Clinton*	X	contract	2-Apr-2024	<u>2014-1-10</u>	16-Jan-2014	1-Apr-1985	6/15/1979	9/10/1984	Secretary (Chairman)
X	Clintonville*	X	county signed	14-Jan-2014	<u>2-2013</u>	5-Nov-2013	†	9/10/1984	9/10/1984	Appointed Official (CEO)
X	Cooperstown*	X	county signed	2-Apr-2024	<u>2013-1</u>	16-Jan-2014	†	2/6/1991	2/6/1991	Building Permit Officer (President)
X	Cornplanter	X	contract	3-Apr-2023	<u>No. 82</u>	16-Jan-2014	11-Apr-1987	5/19/1987	5/19/1987	Zoning Officer (Chairman)
X	Cranberry	X	contract	27-Jun-2024	<u>Chapter 36</u>	16-Jan-2014	10-Mar-1988	4/5/1988	4/5/1988	Code Enforcement Officer (Chairman)
X	Emlenton	X	contract	1-May-2023	<u>No. 392</u>	4-Nov-2013	†	6/30/1976	6/30/1976	Secretary (CEO)
	Franklin	X			<u>Chapter 87</u>	4-Jun-2020		9/29/1978	9/29/1978	Secretary (Chairman)
X	Frenchcreek*	X	county signed	19-Nov-2013	<u>No. 2 of 2013</u>	16-Jan-2014	1982	5/5/1978	5/19/1987	Chairman (CEO)
X	Irwin*	X	contract	5-Mar-2018	<u>2013-1</u>	8-Oct-2013	†	1/16/2014	2/19/2009	Secretary
X	Jackson*	X	county signed	11-Mar-2025	<u>No. 1 of 2013</u>	16-Jan-2014	†	8/19/1991	8/19/1991	Secretary (Chairman)
X	Mineral*	X	county signed	19-Nov-2013	<u>1-2013</u>	16-Jan-2014	†	1/16/2014	1/1/1987	Roadmaster (CEO)

Table 5.2.1.1-1: Floodplain Administration Information by Municipality

Storm Water Management Plan	Municipality	NFIP Participation	FPM Agreement	Agreement Signed	Ordinance	Effective	Adopted	Pre-FIRM (=/FBHM)	NFIP Enrollment Date	Designated FPM
X	Oakland*	X	contract	14-Dec-2021	<u>1-21</u>	8-Jun-2021	†	1/16/2014	12/21/1987	Building Permit Officer (CCI)
X	Oil City	X	county signed	12-Nov-2024	<u>Chapter 170</u>	16-Jan-2014	25-Jan-1996	7/5/1977	7/5/1977	Building Code Official
X	Oilcreek*	X	contract	8-Jun-2021	<u>2013-3</u>	9-Dec-2013	†	1/16/2014	10/1/1986	Permit Officer (CCI) / Chairman
X	Pinegrove*	X	county signed	19-Nov-2013	<u>No. 26</u>	16-Jan-2014	†	9/10/1984	9/10/1984	Appointed by resolution?
	Pleasantville	Non-participation Letter					†			
X	Plum*	X	county signed	9-Jul-2024	<u>1 of 2013</u>	16-Jan-2014	†	9/10/1984	9/10/1984	Secretary/Chairman
X	Polk*	X	county signed	19-Nov-2013	<u>2013-1205</u>	5-Dec-2013	†	1/1/1987	1/1/1987	Chief of Police / Council President
X	President*	X	contract	10-Aug-2023	<u>1 of 2023</u>	7-Nov-2023	1-May-1992	2/6/1991	2/6/1991	Chairman
X	Richland*	X	contract	6-Jul-2023	<u>No. 320</u>	7-Nov-2013	†	1/16/2014	9/10/1984	Appointed annually (Secretary/Office) / CEO
X	Rockland*	X	contract	5-Mar-2018	<u>111113</u>	#####	†	10/16/1990	10/16/1990	Appointed annually (Secretary/Office) / CEO
X	Rouseville	X	contract	11-Apr-2023	<u>No. 262</u>	8-Oct-2013	4-Oct-1988	5/19/1987	5/19/1987	Zoning Officer/CEO
	Sandycreek	X	contract	5-Mar-2024	<u>No. 1 of 2013</u>	6-Nov-2013	1989	10/16/1990	10/16/1990	Zoning Officer / Chairman
X	Scrubgrass*	X	contract	18-Jul-2023	<u>2013-1</u>	#####	†	8/5/1991	8/5/1991	Appointed annually (Secretary/Office) / CEO
X	Sugarcreek	X	contract	2-Oct-2024	<u>No. 276 of 2013</u>	4-Dec-2013		5/19/1987	5/19/1987	Zoning Officer / CEO
X	Utica*	X	contract	11-Jun-2024	<u>2013-4</u>	#####	†	3/4/1991	3/4/1991	Secretary / Mayor

Table 5.2.1.1-1: Floodplain Administration Information by Municipality

Storm Water Management Plan	Municipality	NFIP Participation	FPM Agreement	Agreement Signed	Ordinance	Effective	Adopted	Pre-FIRM (=/= FBHM)	NFIP Enrollment Date	Designated FPM
X	Victory*	X	county signed	19-Nov-2013	<u>2 of 2013</u>	9-Dec-2013	†	9/24/1984	9/10/1984	Secretary / President
	Barkeyville	Non-participation Letter	county signed	14-Jan-2025	<u>2 of 2024</u>	31-Oct-2024		1/16/2014	3/24/2025	Zoning Officer
*Indicates a municipality that does not have their own zoning ordinance † Believed to have adopted Single Purpose FPM Ordinance										

5.2.2. Administrative and Technical Capability

Administrative capability is described by an adequacy of departmental and personnel resources for the implementation of mitigation-related activities. Technical capability relates to an adequacy of knowledge and technical expertise of local government employees or the ability to contract outside resources for this expertise in order to effectively execute mitigation activities. Common examples of skill sets and technical personnel needed for hazard mitigation include: planners with knowledge of land development/management practices, engineers or professionals trained in construction practices related to buildings and/or infrastructure (e.g., building inspectors), planners or engineers with an understanding of natural and/or human caused hazards, emergency managers, floodplain managers, land surveyors, scientists familiar with hazards in the community, staff with the education or expertise to assess community vulnerability to hazards, personnel skilled in GIS, resource development staff or grant writers, and fiscal staff that can handle complex grant application processes.

A variety of administrative capability are established in Venango County and its jurisdictions. These capabilities can support the implementation of mitigation actions that are proposed in this plan. These capabilities include:

- The **Venango County Regional Planning Commission** reported that among municipalities, 14% of municipalities had dedicated planning staff, 66% had engineers, 30% had grant writers, and 2% of the municipalities had GIS (or HAZUS) staff or capabilities. 100% of municipalities are members of the Venango County Regional Planning Commission. Generally, administrative and technical capacity to conduct hazard mitigation activities was noted as limited.

The Planning Commission provides significant support and resources to more than half of the municipalities, as well as duties related to hazard mitigation planning, such as:

- Preparing and updating the Venango County Comprehensive Plan.
- Administering the County's SALDO, and monitoring municipal SALDO regulations.
- Assisting municipalities with preparing, modifying or reviewing plans and ordinances including comprehensive plans, capital improvements, zoning and subdivision ordinances, GIS mapping, and the NFIP.
- Representing the County on various committees, boards, and organizations throughout the County and region, such as the HMP Update.

- Offering technical assistance to public agencies and organizations including grant writing and administration.
- The **Venango County Geospatial Analyst**, within the Planning Commission, performs mapping and spatial database maintenance work for various County departments including Planning, DES, and the Conservation District. The office provides several open data resources for municipalities to use and can assist municipalities in specific projects.
- The **Venango Department of Public Safety** coordinates countywide emergency management efforts. Each municipality has a designated LEMC who possesses a unique knowledge of the impact hazard events have on their community. A significant amount of information used to develop this plan was obtained from the EMCs. The Department also contains a **LEPC**, which is responsible for developing an emergency response plan that is reviewed at least annually and providing information about chemicals in the community to citizens, facility personnel, and emergency responders. The LEPC is comprised of staff from Department of Public Safety, and a variety of volunteers from agencies including fire companies, local elected officials, transportation officials, County staff, utility providers, facility representatives, higher education representatives, and medical.
- The **Venango Conservation District** serves the County by promoting the wise use, enhancement, and understanding of natural resources and improve the environmental quality for the citizens of the county and state. The District also provides specific hazard mitigation planning services such as:
 - Administering the Agriculture Conservation Assistance Program (ACAP) to assist farmers in soil and water conservation
 - Providing technical assistance to landowners
 - Coordinating protection & restoration projects through the Watershed Conservation Program
 - Coordinating Environmental Education programs including the annual Envirothon competition to foster stewardship in our community
 - Administering the Dirt, Gravel, and Low Volume Roads program to implement locally-led, environmentally sensitive road maintenance
 - Practicing Partners with the PA Department of Environmental Protection on the Vector-Borne Disease Control Program
 - Reviewing and issuing general permits under the Pennsylvania Dam Safety and Waterway Management Program
 - Promoting voluntary compliance during earthmoving activities under the Erosion and Sediment Pollution Control Program
 - Processing sales of Topographic Maps, Plat Books, Soil Test Kits, and Well & Spring Water Test Kits, and offers our annual Seedling Sale

- The **Oil Regional Alliance of Business, Industry & Tourism (ORA)** manages the Oil Region National Heritage Area and increases the prosperity of the Oil Region by enticing people to live, work, learn and play in “the Valley that Changed the World” through the preservation, promotion, development, and support of historical, educational, natural, recreational, residential, commercial and industrial destinations. Hazard mitigation and equity planning related efforts include:
 - Administering the Oil Region National Heritage Area
 - Promoting business retention, expansion, and recruitment
 - Assisting in I-80 development
 - Assisting with brownfield development
 - Monitoring and assisting workforce development
 - Pursuing community development and downtown revitalization
 - Coordinating marketing for tourism, economic, and heritage development
 - Administering the Allegheny GeoTrail Project
 - Marketing Wild and Scenic Allegheny River
 - Rehabilitating all historic properties owned by the Oil Region Alliance
 - Administering educational mini-grant programs
 - Enhancing and preserving the region’s recreational and natural resources
- The **Venango County Department of Human Services** is a branch of the County government that is managed by the Venango County Commissioners. It is directed by a Human Services Administrator who works with categorical and system directors and managers to ensure that a comprehensive continuum of high-quality services is available to qualifying residents of Venango County. Its mission is to assist in leading safe, healthy, and productive lives through equitable, trauma-informed, and outcome-focused services while being an accountable steward of commonwealth resources. The Department has a Facebook page to share information and events.
- The **Venango County Department of Aging** works to ensure that older adults across Pennsylvania have access to quality services and supports that help them age and live well. The Department provides local outreach to support services for the aging population.
- There are **three watershed associations** in the Venango County region: Scrubgrass Creek Watershed Association, South Sandy Creek Watershed Association, and Slippery Rock Watershed Coalition.

Other Administrative and Technical Staff

Based on assessment results, municipalities in Venango County have limited administrative and technical staff needed to conduct hazard mitigation-activities. The municipalities vary in staff size, but over 50% at a smaller scale. Each municipality also varies in resource availability, fiscal status, service provision, population, geographical size, and vulnerability to the profiled hazards. The 16 municipalities who returned assessment forms were more likely to rate their administrative capabilities as limited or moderate. This is valid given the level of detail and content, and most municipal stakeholders were unsure if plans, staff, financial opportunities, and outreach existing.

- Each municipality carries out its own daily operations and provides various community services according to their local needs and limitations. Some of these municipalities have formed **cooperative agreements and work jointly with their neighboring municipalities to provide such services as police protection, fire and emergency medical response, solid waste disposal, recreational opportunities, wastewater treatment, water supply management and infrastructure maintenance**. Much of the planning, engineering, and land surveying capabilities are provided by consulting firms Arcadis Consultants and Gibson-Thomas Engineering, however other municipalities noted no engineering support. The City of Oil City has an Engineering Office, however staffing is limited.
- Information collected from the 2025 results suggests there has not been an increase in **grant-writing staff** per municipality. Richland Township noted they receive support from the County level to apply for grants and receive assistance with GIS data. The City of Oil City noted the Community Development Coordinator has provided grant support for approximately 13 years, however the City does not have GIS support. Rockland Township noted planning staff from the Township or County lead grant writing efforts, and the administrative component is left to the EADS Group. The Bureau of Forestry provides substantial support in GIS expertise.
- Clinton Township and Rockland Township share the same **Construction Code Inspector**. The City of Oil City recently hired a new Building Code Officer four months ago (June 2020) in the City's Code Office. The Oil City Code Office also upholds property maintenance codes and reviews any new development plans.
- Richland Township noted in-house **land use and development planners**.
- The City of Oil City stated they also have **mutual aid agreements and a purchasing department**. Other filled technical positions include **Business Administrator, Chief Financial Officer, Clerk, and Community Planner**.
- All municipalities in the County have an identified **LEMC**, although some of these coordinators are responsible for more than one jurisdiction.

The current administrative and technical capabilities may create a challenge for some municipalities to expand or improve their current overall capabilities. State agencies can provide technical assistance for mitigation activities. State agencies that can provide hazard assistance include, but are not limited to:

- Pennsylvania Department of Community and Economic Development;
- Pennsylvania Department of Conservation and Natural Resources;
- Pennsylvania Department of Environmental Protection;
- Pennsylvania Department of Health; and
- Pennsylvania Department of Transportation.

Venango County can also partner with Federal agencies for technical assistance on mitigation activities. These agencies include but are not limited to:

- Federal Emergency Management Agency;
- United States Army Corp of Engineers;
- Department of Housing and Urban Development;
- United States Department of Agriculture;
- Economic Development Administration;
- FEMA's Emergency Management Institute;
- United States Environmental Protect Agency; and
- Small Business Administration.

5.2.3. Financial Capability

A critical part to the implementation of any plan is the financial resources to accomplish the priority projects identified. The implementation of mitigation actions requires time and fiscal resources. While some mitigation actions are less costly than others, it is important that money is available locally to implement policies and projects. Financial resources are particularly important if communities are trying to utilize state or federal mitigation grant funding opportunities that require local-match contributions. Based on the Capability Assessment Survey results received, most municipalities within the County perceive fiscal capability to be limited.

The key factor in determining fiscal capability is to analyze how tight these constraints are. This could involve a detailed auditing process to tally all revenues and expenditures or could involve an assessment of existing financial ratings as identified and reported by the DCED. These ratings can be used as a base indicator of fiscal capability at the municipal level. The Pennsylvania Municipalities Financial Recovery Act (Act 47 of 1987) identified fiscally distressed municipalities based on established criteria. Analysis of the Act 47 fiscally distressed municipality list indicated that none of Venango's County's municipalities were identified as being fiscally distressed according to the established rating criteria.

Though the smaller, less populous municipalities do not have sufficient budgets to do costly mitigation projects without financial assistance, this does not preclude these municipalities from participating in hazard mitigation activities. Cooperative

arrangements, coordinated efforts, and resource efficiency may serve as effective avenues for overcoming fiscal constraints and accomplishing hazard mitigation objectives at the local level.

Support for mitigation planning actions is most often provided by the Commonwealth of Pennsylvania and the Federal Government. Programs that complement Venango County mitigation planning initiatives include the following state and federal programs.

- Local administered programs include:
 - The **Venango County Watershed Conservation Program** works to restore, protect, and enhance surface and groundwater resources throughout Venango County. We assist landowners, farmers, businesses, and other stakeholders with solving our county's critical resource concerns. We do this by providing technical assistance which can involve project planning, grant funding procurement, and permit application assistance.
 - The **Venango County Housing Rehabilitation Program** ensures a safer, healthier housing stock for the County's current and future homeowners, and to avoid any deferred maintenance that can often put a home on the path to becoming a neighborhood blight. This program is a response to a Housing Market Analysis (czbLLC, 2009) which called for initiatives to stabilize the County's market, in part, by rehabilitating at-risk homes.
- Pennsylvania administered programs include:
 - **Municipal Assistance Program (MAP)**, which provides grant funds to implement a variety of services and improvements to manage development with intergovernmental strategies.
 - **Land Use Planning and Technical Assistance Program**, which provides grant funds for the preparation of community comprehensive plans and ordinances to implement them.
 - **Flood Mitigation Program (FMP)**, which provides grants and technical assistance for projects that address flood mitigation.
 - **The Growing Green Plus Grants Program** is an extension to the Growing Greener Grant Program administered by the PA DEP. Programs covered with these funds are: Growing Greener Watershed Restoration and Protection, Surface Mining Conservation and Reclamation Act Bond Forfeiture, and Abandoned Mine Drainage Set-Aside Grants.
 - On February 10, 2025, it was announced the Venango Conservation District will receive an \$18,096 Growing Greener grant for the East Branch Sugar Creek Protection Project. They will be partnering with Oakland Township and the PA Fish & Boat Commission to implement a streambank stabilization and fish habitat enhancement project.

- The **Environmental Education Grant** administered by the PA DEP was established by the Environmental Education Act of 1993, which mandates that five percent of all pollution fines and penalties collected annually be set aside for environmental education.
 - On May 23, 2024, it was publicized that the Venango Conservation District was awarded \$3,062 for the “Enhancing the Stream Investigation Program at the Venango Conservation District” to create interactive aquatic macroinvertebrate tanks that enhance its current stream investigation program and increase its capacity to provide meaningful, water education programming to youth and adults in Environmental Justice areas.
- **Pennsylvania Infrastructure Investment Authority (PennVEST)** administers a low interest loan and grant program for new construction or improvements to publicly or privately-owned drinking water, storm water, or sewage treatment facilities, as well as non-point source pollution prevention best management practices (BMPs).
 - In January 2024, PennVEST awarded nearly \$11 million in grant and low-interest low funding to two sewer projects and one water quality plan in Frenchcreek Township, the General Authority of the City of Frankly, and Polk Borough. Frenchcreek’s grant will go toward a new 450,000 gallons/day treatment plant, a new headworks facility with a main channel and bypass channel, and new aerobic digesters. Sections of an aging waterline will be replaced along Allegheny Boulevard between the French Creek overpass and the intersection of Front Street in Sugarcreek Borough. Polk Borough will build a new wastewater treatment plan that will be contributed to Frenchcreek Township.
 - In 2023, \$4 million was awarded to install a new 100,000 gallon water tank to Clintonville Borough and a pump station in Sandycreek. If grant funding was excluded for Clintonville Borough, user rates would have increased by nearly 116% compared to 26% with the grant.
- DCNR administers **Community Conservation Partnerships Program Grants**. This program is funded with a variety of state and federal funding sources, including the Keystone Recreation, Park and Conservation Fund (Key 93) which encompasses several environmental and conservation related funds.

- In 2024, the City of Franklin was awarded \$269,400 to prepare a tree canopy plan.
- The Oil Region Alliance of Business, Industry, and Tourism was also awarded \$179,300 to develop public access along the Allegheny River in President Township, to include a boat launch and fishing pier, ADA access, landscaping, and other related site improvements.
- Lastly, Deerk Creek Road in Frenchcreek Township will be receive \$311,800 to acquire approximately 253 acres for a new nature preserve.
- DCED manages the **PA Small Water and Sewer Grant** which funds small water, sewer, storm sewer, and flood control infrastructure projects. Funding is made available by the Commonwealth Financing Authority.
 - In 2020, three projects received funding to protect and improve municipality water systems: a Hasson Heights water line in Cornplanter Township, a Nicklin pump station replacement in Frenchcreek Township, and the wastewater treatment plan frit removal rehabilitation in the City of Franklin.
 - In 2023, the General Authority of the City of Franklin was awarded \$585,333 to install an emergency generator. The Uniontown Heights Municipal Authority received \$423,175 to go toward a sewer line replacement project in Sandycreek and French Creek Townships.
- The **Dirt, Gravel, and Low Volume Road Maintenance Program** is an innovative non-point source pollution control program for local municipal road officials managed by the Department of Agriculture. Under this program, the State Conservation Commission provides grant funding through county conservation districts to state and local entities to eliminate stream pollution caused by runoff and sediment from dirt, gravel and low volume roads. Eligible applicants are state and local entities that own public roads. Federal roads and privately owned roads are not eligible for grant funds.
 - In 2023-2024, Canal, Oakland, Pinegrove, and Irwin Townships received a total of \$521,027 for dirt and gravel road projects on four roads. Irwin Township was awarded a low-volume road project on Whieldon Road for \$23,700.
- The **Marcellus Shale Fund** specifically allocates certain amounts from the impact fee into the Pennsylvania Housing Affordability and Rehabilitation

Enhancement Fund (PHARE) Fund to address the need for affordable housing in the counties, where producing nonconventional gas wells are located, who have adopted the local impact fee as required in the Act. Act 13 provides an annual allocation of \$5 Million into the PHARE Program with the potential for additional revenues when funds remain following eligible disbursements to qualifying municipalities. In 2021-2022, Venango County was listed as an eligible county and received \$400,000 to support the completion of owner-occupied home rehabilitation projects.

- Federal Government programs including:
 - **Hazard Mitigation Assistance Programs**, which provide grants for cost-effective mitigation projects either in the absence of a disaster or after a disaster declaration has occurred:
 - **Flood Mitigation Assistance Program (FMA)**
 - **Hazard Mitigation Grant Program (HMGP)**
 - **The Building Resilient Infrastructure and Communities (BRIC) Program** is a new funding program that will support states, local communities, tribes, and territories undertake hazard mitigation projects. BRIC replaced the Pre-Disaster Mitigation (PDM) program that was previously housed under HMA programs.
 - **Community Development Block Grants (CDBG)**, which provides funds to address a wide range of community development needs, including community development activities directed toward revitalizing neighborhoods, economic development, and providing improved community facilities and services. CDBG funds may be used for activities such as acquisition of real property; relocation and demolition; rehabilitation of residential and non-residential structures; and construction of public facilities and improvements to facilities such as water, sewer, and streets. There is an extra CDBG fund set aside for post-disaster recovery costs. **CDBG Mitigation Funds (CDBG-MIT)** may also be used in areas impacted by disasters to mitigate future risks and reduce losses.
 - The **Venango County Three-Year Community Development Plan** was submitted with the FY2023 CDBG application. The objectives of the plan assist the County in determining annual project selections, keeping in mind that all activities proposed in the CDP meet the National Objectives laid out as part of the Community Development Block Grant program.

- A CBDG was awarded to Oil City for a dedicated senior center and is one of the most active in the County. Townships and boroughs outside of Oil City use the center as well. Funds also funded the conversion of a nursing home to a personal care facility.
- **Weatherization Assistance Program**, which enables low-income households to make their homes more energy efficient.
 - Community action offices are located in Clintonville, Cooperstown, Cranberry, Emlenton, City of Franklin, Kennerdell, Oil City, Oil Creek, Pleasantville, Polk, Reno, Rocky Grove, Rouseville, Seneca, Utica, and Venus.
- The **Emergency Watershed Protection (EWP) Program** is administered by the USDA Natural Resources Conservation Services to help communities quickly address serious and long-lasting damages to infrastructure and the environment. These funds are allocated soon after disasters to assist in with immediate recovery needs.
- The **Homeland Security Grant Program (HSGP)** assists communities in implementing the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient Nation. The HSGP's allowable costs support efforts to build and sustain core capabilities across the prevention, protection, mitigation, response, and recovery, including priorities towards preventing terrorism and enhancing state and major urban area fusion centers.
- The **Assistance to Firefighters Grant (AFG)** administered by FEMA provides funds to help firefighters and other first responders obtain essential resources to protect the public and emergency responders in hazard events.
 - Over the last five years, Seneca VFD in Cranberry Township has received a number of AFGs and state grants for the purchase of equipment, such as breathing apparatus, radios, pagers, rescue equipment, and turnout gear.
 - The VFD is using a 2023 grant to purchase a fire-alarm system for the station and a lighting upgrade on one of its engines.

5.2.4. Education and Outreach

Education and outreach programs and methods are used to implement mitigation activities and communicate hazard-related information. Examples include fire safety programs that fire departments deliver to students at local schools; participation in

community programs, such as Firewise Communities Certification or StormReady Certification; and activities conducted as part of hazard awareness campaigns, such as Tornado or Flood Awareness Month. Some communities have their own public information or communications office to handle outreach initiatives.

- **Firewise USA® Program** is administered by National Fire Protection Association (NFPA) administers the Firewise USA® Program to encourage local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. The program provides resources to help homeowners learn how to adapt to living with wildfire and encourages neighbors to work together to take action to prevent losses. The national Firewise USA® Recognition Program has nearly 1,000 active member communities in 40 states, as well as a participation retention rate of 80 percent over the past decade. The program, aimed at homeowners, provides specific criteria for communities regarding wildfire preparedness, and offers national recognition for their work. According to the PA DCNR, Firewise USA® has replaced Firewise Communities which was discontinued in 2019. Only five Pennsylvania communities participate in NFPA Firewise USA, none are in Venango County.
- **StormReady®** helps arm communities with the communication and safety skills needed to save lives and property before, during, and after an event. All of Pennsylvania's 67 counties meet enrollment criteria. Locations that do not meet StormReady® criteria can demonstrate their support for weather safety by joining the StormReady® Supporter program. Venango County is a StormReady® county.
- **Allegheny Valley Conservancy** promotes good land use through the protection, conservation and management of the open space, forested, agricultural, historic, natural, ecologically significant, environmentally sensitive, biological diverse and scenic resources of the Allegheny River and French Creek watersheds in northwestern Pennsylvania. Good land use is essential to the need for clean air, clean water, and livable communities. The primary tool of the conservancy is legally binding, perpetual, enforceable conservation easements. The conservancy also accepts the donation of land and may purchase significant parcels of land.
- **French Creek Valley Conservancy** works to promote the protection, stewardship, and education and outreach regarding issues that impact the French Creek Watershed. The Conservancy conducts various projects in the watershed, including habitat improvement, riparian buffer restoration, riparian buffer conservation, education for general public, fund raising, grant writing, public and media relations, partnership development, keep your group going, watershed planning, geographic information systems use, and land use decision making.
- **PA CleanWays of Venango County** empowers people to eliminate illegal dumping and littering in Pennsylvania. Projects conducted by PA CleanWays' include: stream bank restoration, habitat improvements, education for watershed

group, education for general public, education for other audiences, public and media relations, partnership development, and mapping.

- **PA Organization for Watersheds and Rivers (POWR)** is dedicated to the protection, sound management and enhancement of the Commonwealth's rivers and watersheds and to the empowerment of local organizations with the same commitment. POWR provides educational outreach, media relations and partnership development for the Commonwealth's rivers and watersheds.
- **PA Rivers Resource Advisory Council** includes projects such as stream bank restoration, stream channel restoration, habitat improvement, riparian buffer restoration, riparian buffer conservation, stream bank fencing, agricultural BMP's, abandoned mine drainage passive and active treatment, storm drain stenciling, education for watershed group, education for general public, education for other audiences, fundraising, grant writing, public and media relations, partnership development, keep your group going, watershed planning, community visioning, mapping, GIS development, GIS use, watershed or non-point pollution assessment, water monitoring (chemical and physical), water monitoring (biological), data analysis, land use decision making, storm water management, lake management and BMP design and selection.
- **Watershed Assistance Center Western Pennsylvania Conservancy** provides technical assistance and educational trainings to watershed organizations and interested stakeholders. Typical projects of the Conservancy include: stream bank restoration, stream channel restoration, habitat improvement, riparian buffer restoration, riparian buffer conservation, stream bank fencing, agricultural BMP's, abandoned mine drainage passive and active treatment, storm drain stenciling, education for watershed group, education for general public, education for other audiences, fundraising, grant writing, public and media relations, partnership development, keep your group going, watershed planning, community visioning, mapping, GIS development, GIS use, watershed or non-point pollution assessment, water monitoring (chemical and physical), water monitoring (biological), data analysis, land use decision making, storm water management, lake management and BMP design and selection.
- **Other Education and Outreach Capabilities**
 - Several municipalities report they continue to provide local law enforcement training on responding to civil disturbances. Specific types of training noted included crowd control team training in response to court verdicts, active shooter training, and civil disturbance response as part of annual update training for all officers. Municipalities also attend the county LEPC and Quarterly Trainings to distribute all-hazards education and preparedness materials to communities.
 - The City of Oil City noted there are local citizen groups or non-profit organization focused on environmental protection, emergency preparedness, and access and functional needs populations. In addition, there are natural disaster or safety related school programs, ongoing

public information, and public-private partnership initiatives addressing disaster-related issues.

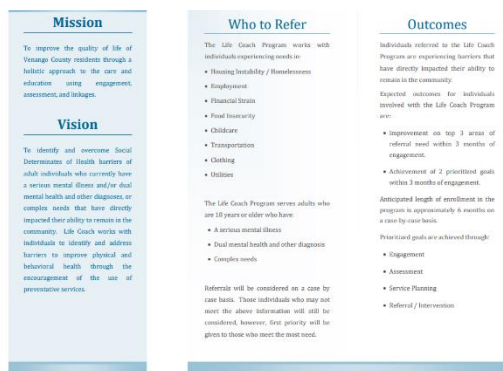
- o Barkeyville Borough's Community Emergency Team facilitates classes to several members of the community on ongoing safety.

5.2.5. Socially Vulnerable or Underserved Communities

To understand capabilities to provide assistance and support to socially vulnerable and underserved communities, meetings were held with organizations and a county office that work directly with some of these communities. This section provides an overview of their work and any capabilities that may be leveraged to mitigate the impacts of hazards discussed in this plan.

- **Venango County Community Support Services (CSS)** provides a variety of services to the low-income residents of Venango County. Services are aimed at assisting individuals and families in overcoming their barriers to self-sufficiency by promoting both individual and family functioning and stability. It has been determined that reaching these overall outcomes may best be achieved through the provision of services including: education, employment, housing, income management, linkages, nutrition, and self-sufficiency. CSS also works with various agencies and organizations such as: AmeriCorps, associated charities, child development centers, Clintonville Food Pantry, community services, human services, local churches, Mustard Seed Missions, Oil City and Franklin Salvation Army, Oil City YMCA, Red Cross, and Youth Alternatives.

Figure 5.2-3: Life Coach Brochure



- **Life Coach** improves the quality of life of the County residents through a holistic approach to the care and education through engagement, assessment, and linkages. The Life Coach assists adults with serious mental illness or dual diagnosis, and/or complex needs that have directly impacted their ability to remain in the community. We work with individuals to directly address and mitigate Social Determinates of Health barriers in the areas of transportation, employment, housing instability, food

insecurity, clothing needs, childcare access/affordability, and/or budgeting for utilities (see Figure 5.2-3).

- **Court Appointed Special Advocates (CASA)** of Venango County trains and provides quality volunteer advocates for children who are involved in juvenile court proceedings as a result of abuse and/or neglect. Their mission is to ensure that every child has a safe, supportive and permanent home through community education and providing advocates for the children's best interest.

- **Employment Aid Program – Employment/Schooling** offers financial help in securing required clothing, books, testing fees for post-secondary schooling, car repairs, and similar assistance to help you secure or maintain employment or schooling.
- **LIHEAP (CRISIS)** supports households that lose their primary heat source due to furnace malfunction. Venango County receives all referrals for this program directly from the County Assistance Office. Individuals / Families must live in Venango County and have an annual income at or below 150% of the Federal poverty level. Crisis season is generally runs between November 1st and April 15th.
- **Neighborhood Hub – South Side** increases access to services to address Social Determinants of Health for residents in the Oil City Southside and immediate surrounding areas. The Neighborhood Hub – Southside is located at 106 Walnut St., Oil City, to create community connections which provide supports and resources that improve whole family care. These Social Determinants of Health are the conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality of life.
- **Neighborhood Hub – Third Ward** increases access to services to address Social Determinants of Health for residents in the Grant Street area and immediate surrounding areas. The Neighborhood Hub is designed to create community connections that provide supports and resources that improve whole family care. The Hub is located at 701 Grant Street in Franklin.
- **Ombudsman** resolves individual complaints involving long-term care service, while working to improve and enhance the long-term living system for the residents and their families.
- **United Community Independence Programs of Venango County (UCIP)** is a caring and supportive agency dedicated to people with developmental disabilities. UCIP strives to provide supports for an everyday life and people's dreams beyond the horizon. Programs include supported employment, community homes, home and community supports, and life-sharing services.
- **United Way of Venango County** focuses on addressing critical health, education, and income needs to create a stronger and more resilient community. United Way of Venango County identifies the most critical needs in the community and finds creative ways to provide solutions. They continue to show extreme resilience and dedication by providing programs that fight against our community's most daunting social crises to improve health, education, and financial stability for all of Venango County.
- **Venango County Veterans Affairs** works with veterans and their spouses to ensure they receive financial or other benefits from their service. This may include filing claims based on financial need or a service-connected disability and signing up for healthcare through the United States Department of Veterans Affairs. The office also works with the nonprofit Veterans Assistance Fund. The office may also mobilize in times of disaster to provide support. For

example, in the event of significant flooding, the office may join other agencies and departments in discussing response and recovery. This may also include ensuring veterans are considered and are able to secure funding support.

- **Weatherization Assistance Program**, which enables low-income households to make their homes more energy efficient.
 - Community action offices are located in Clintonville, Cooperstown, Cranberry, Emlenton, City of Franklin, Kennerdell, Oil City, Oil Creek, Pleasantville, Polk, Reno, Rocky Grove, Rouseville, Seneca, Utica, and Venus.

5.2.6. Plan Integration

Plan integration ensures that hazard mitigation planning is woven into each municipality's planning and regulatory documents. These include the plans, policies, codes, and programs that guide land use and development. Effective integration of hazard mitigation occurs when the planning framework fosters development that does not increase risks from known hazards or leads to redevelopment that reduces risk from known hazards (FEMA, 2013). For information on how the 2020 HMP was integrated in to planning mechanisms across the County, please refer to Section 6.1.3.

While not all regulatory tools are relevant to every municipality in Venango County, each municipality should evaluate what tools are available to them related to their vulnerability identified in this HMP. Communities should continue to review and revise building codes, zoning ordinances, floodplain ordinances, and subdivision and land use development ordinances with respect to findings in the 2025 HMP risk assessment. For example, a municipality could revise its zoning ordinance to restrict the density of new development in hazard-prone areas or guide development away from these areas. Some tools may also be useful for addressing multiple hazards in these municipalities; for example, the presence of a stormwater management plan would greatly enhance mitigation capabilities needed to address both flood and transportation hazards.

Comprehensive Plans

As mentioned above, Venango County finalized its Comprehensive Plan in October 2024. It is key that the County integrates findings and recommendations from the 2025 HMP Update into the implementation strategies and projects identified in chapters of the Comprehensive Plan. The planning elements in these documents relate to risks identified in this plan, for example flood, tornado and windstorms, and civil disturbance. The HMP along with the Comprehensive Plan assist County departments, municipalities, agencies, businesses, and residents to align their resources, funding, and actions to create a stronger and competitive Venango County.

The plan includes two volumes: Volume 1: Topics, Priorities, Goals, and Actions and Volume 2: Community Survey and Engagement Summaries. Population data from the

Center for Rural Pennsylvania projects that the County's population will continue to decrease through 2050 at an estimated 45,041. It is possible that development will not increase with a declining population, and better analysis can be done to avoid vulnerable areas for development.

Volume 1 also emphasized the importance of economic development – businesses and jobs, community empowerment and revitalization, and recreation and tourism. Municipal actions to further zoning, planning, and investment doctrine can align with the County's goals regarding economic development. As discussed previously, one of the key tools that can be harnessed for managing development identified in Volume 1 is through zoning and land use regulations. In addition to the I-80 Interchange Corridor and Route 8 Corridor, vacancies and blights are targeted for economic redevelopment. Improving public transit to provide more options for students and employees can reduce reliance on private car ownership and possibly fewer transportation incidents.

One of the County's Comprehensive Plan goals is to encourage upper-story development that is code compliant. In addition, many actions in the HMP align with preserving water resources, parks, and natural areas directed for recreation and tourism.

The County Comprehensive Plan acknowledges the young and aging-in-place community like the HMP. The Comprehensive Plan establishes actions to support the population via transportation access to senior centers and other senior used resources, keeping the community active, increasing housing, promoting route home maintenance programs, and improving Digital Literacy. These actions all provide more resources to the population and improve the communication of hazard related information. The Plan also identifies actions to expand affordable childcare options and new childcare centers and programs. Newly constructed childcare centers and program locations need to be documented in the critical facilities list of the HMP.

Like the HMP's efforts to incorporate equity planning, the Comprehensive Plan lists actions to support underserved communities, such as broadband internet and transportation to clinics. The Comprehensive Plan notes local programs with the public at all ages and with community leaders, local law enforcement, fire department, and public safety will create a multi-general community. These programs can include the educating on hazard mitigation efforts that can be done at home or businesses, disaster relief, and emergency preparedness. Goal 3 of the Comprehensive Plan specifically calls out implementing recommendations of the current Emergency Management Plan and Hazard Mitigation Plan to ensure access to critical services and resources.

CAP

The CATA developed a CAP in 2022 for Crawford and Venango Counties. Rural communities play a role in global climate mitigation efforts. CATA strives to be a leader not just in rural transit but in sustainability, expansion of mobility, and stewards of the

communities. CATA has aggressively built partnerships at the local, state, and national level to address climate issues within traditional service model of public transportation and beyond. These initiatives have led to the current reduction of Greenhouse Gas Emissions (GHG) by over 24% since 2017. The CAP identifies goals and actions to mitigate changes in climate, reduce reliance on personal vehicles, and above all educate rural communities involved in climate policy. Any updates to these plans or additional plans that are developed in the county should consider the 2025 HMP when analyzing risks and developing mitigation strategies.

Ordinances and Codes

Hazard mitigation planning can be integrated into Venango County's Stormwater Management Regulations. The municipalities that are regulated by the County's stormwater management requirements in its SALDO could also opt to develop their own, more stringent stormwater management ordinances. Municipalities can provide recommendations for proper long-term operation and maintenance of stormwater management facilities within the land development subdivision ordinances, work closely with the County to assure that stormwater facilities are maintained over the long-term, and can ensure any new hydrology studies are adopted upon completion.

Unfortunately, each municipality has adopted varying SALDO language for each zone, but a Municipal Zoning Summary (see Figure 5.2-2) has been developed by the County Regional Planning Commission to generalize zoning. The County should work to organize and collaborate with municipalities during its next SALDO update to create a formalized zoning code.

Specific language in the Venango County SALDO that relates directly to hazard mitigation is documented below. Whether the County is administering the zoning ordinance for municipalities, or the municipality maintains administration, the following guidelines from Venango County's SALDO can be enforced through the lens of mitigating each municipality's hazards:

- Assist orderly, efficient, integrated, and harmonious development of the County.
- Prevent or eliminate damage to the environment, and to encourage productive and enjoyable harmony between man and his environment, consistent with the mandates of the National Environmental Policy Act of 1969 and Article I, Section 27 (the Environmental Amendment) of the Pennsylvania Constitution. As well as ensuring the proper management and design of stormwater BMP's through the Stormwater Management Act of 1978 (Act 167) in recognizing that development can dramatically effect of stormwater runoff.
- Proposals must include existing site characteristics such as:
 - Topographic contours shown at five (5) foot vertical intervals for land with average undisturbed slope less than twenty-five percent (25%) and, at a

minimum, vertical intervals of ten (10) feet for slopes greater than 25%. One (1) or two (2) foot topographic contours may be required for more densely developed projects or when deemed appropriate by the Commission.

- Soil types and boundaries as shown in the Venango County Soil Survey.
- Prominent natural and topographic features including but not limited to watercourses, wetlands, drainage channels, sinkholes, rock outcroppings, regulatory 100-Year floodplains and floodways, tree masses, plant and wildlife habitat for rare, threatened, or endangered species, areas identified in the Venango County Natural Areas Inventory, and other pertinent elements that may influence design. Additionally, the Preliminary Plan shall indicate any proposed disturbance, encroachment, or alteration to such features when located upon the site proposed for development.
- A note on the plan indicating whether the site is/is not underlain by carbonate geology (limestone and dolomite).
- Location of quarry sites, solid waste disposal areas, illegal dumps, EPA Superfund sites, and other potentially hazardous conditions on the site and on adjacent tracts.
- Proposed site plans must include:
 - A Stormwater Management and Drainage Plan and narrative including runoff calculations with complete hydrologic and hydraulic design and analysis of all conveyance and control facilities in accordance with this Ordinance.
 - Where applicable by law, an Erosion and Sedimentation Pollution Control Plan showing all erosion and sedimentation control measures, temporary as well as permanent, and a letter from the Venango County Conservation District stating that the proposed measures meet all state requirements.
 - If any portion of the project is in a floodplain area, then documentation shall be submitted indicating compliance with all applicable laws and regulations of the municipality in which the project is located and of the Pennsylvania Department of Environmental Protection (PA DEP).

Integration Capabilities

Based on the capability assessment results and information from the HMSC, Venango County's jurisdictions have some form of local land use controls. As is discussed in [Section 6.1 - Mitigation Strategy Update Process Summary](#), Venango County upon review of the 2020 mitigation actions, it was determined that the County and several municipalities completed mitigation actions that achieve plan integration by furthering hazard mitigation goals through various land development regulations. Some other land use tools in municipalities have not been updated recently. As municipalities work

to update comprehensive plans and land use ordinances, local governments can go further to use land use regulations to direct development away from hazard-prone areas. For example, the ridge zoning overlay that three communities already have in place can be adopted by other municipalities with mapped ridges.

A barrier to plan integration and expanding capabilities is often the lack of resources to accomplish activities that they require. Several municipalities noted on the Capability Assessment Surveys that lack of financial and technical and administrative staff resources precludes development of some planning tools. The self-assessment portion of the survey provided each municipality an opportunity to conduct its own self-assessment of its capability to effectively implement hazard mitigation activities. As part of this process, County and municipal officials were encouraged to consider the barriers to implementing proposed mitigation strategies in addition to the mechanisms that could enhance or further such strategies. In response to the survey questionnaire, local officials classified each of the capabilities as either "limited," "moderate," or "high." Table 5.2-3 below summarizes the results of the self-assessment survey. With available resources being limited and stretched into the foreseeable future, plan integration is extremely relevant and will help leverage existing resources to the maximum extent possible.

Table 5.2-3: Self-Assessment Capability Response Expressed Based on Received Forms			
Capability Category	Limited	Moderate	High
Planning & Regulatory		X	
Administrative & Technical	X		
Financial	X		

6. MITIGATION STRATEGY

6.1 MITIGATION STRATEGY UPDATE PROCESS SUMMARY

The Mitigation Strategy serves as the long-term road map to reducing potential losses, vulnerabilities, and shortcomings identified in [Section 4 – Risk Assessment](#). Typically, the Mitigation Strategy includes a list of goals and objectives, with mitigation actions that address those goals and objectives, that are then prioritized based on community needs.

- ✓ **Goals** are long-term aspirations about the resiliency of the community given the potential effects of hazards.
- ✓ **Objectives** are measurable strategies that the Venango County community has determined will be necessary to move closer to each goal.
- ✓ **Actions** are the tasks that are proposed for realizing each objective.

6.1.1. Mitigation Goal and Objective Review

Mitigation goals are general guidelines that explain what the County wants to achieve. Goals are usually expressed as broad policy statements representing desired long-term results. Mitigation objectives describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals; the described steps are usually measurable and can have a defined completion date. The HMSC reviewed the 2020 list of Goals, Objectives, and Actions and made revisions based on the current needs of the County. Table 6.1-1 shows that a new goal was added to address HHPDs, as well as two objectives to keep better records at the County level. In addition, objective 5.3 was edited to more directional language, “Adopt and enforce the statewide UCC.” The 2025 HMP Update’s eight goals and 21 objectives is provided in Table 6.1-1.

Table 6.1-1: Review of Changes to the 2020 HMP Goals and Objectives	
Goal/Objective	Comments
Goal 1: Increase public awareness regarding natural and manmade hazard risks, preparedness and mitigation	
1.1 Educate residents about hazard mitigation resources and grants.	Continued to 2025 HMP.
1.2 Utilize the media for the distribution and publication of hazard information.	Continued to 2025 HMP.
1.3 Provide educational materials and conduct workshops for residents.	Continued to 2025 HMP.

Table 6.1-1: Review of Changes to the 2020 HMP Goals and Objectives	
Goal/Objective	Comments
1.4 Provide access to hazard and mitigation and emergency response resources to residents.	Continued to 2025 HMP.
Goal 2: Ensure that adequate shelter is available to current and future populations.	
2.1 Ensure that all shelters have adequate emergency power resources.	Continued to 2025 HMP.
2.2 Establish a protocol for the sharing of annual shelter survey information.	Continued to 2025 HMP.
2.3 Publicize locations of shelters.	Continued to 2025 HMP.
Goal 3: Identify all RL structures throughout the County.	
3.1 Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	Continued to 2025 HMP.
3.2 Develop a database of information and GIS mapping on all repetitive loss properties.	Removed due to redundancy of Objective 3.1. Actions will be moved to Objective 3.1 in 2025 HMP.
3.3 Identify owners of repetitive loss properties.	Removed due to redundancy of Objective 3.1. Actions will be moved to Objective 3.1 in 2025 HMP.
Goal 4: Develop better hazard data for Venango County and the municipalities.	
4.1 Identify existing hazard data limitations and gaps.	Continued to 2025 HMP.
4.2 Develop and maintain a county hazard log.	Continued to 2025 HMP.
Goal 5: Attempt to reduce the current and future risk of flood damage in Venango County.	
5.1 Direct new development away from high hazard areas, especially high-hazard dams.	Removed as it falls under the newly created Goal 7 and Objectives.
5.2 Adopt and enforce of statewide Uniform Construction Code (UCC).	Edited in 2025 HMP and renumbered to 5.1.
5.3 Ensure that infrastructure improvements are not directed towards hazardous areas.	Renumbered to Objective 5.2.

Table 6.1-1: Review of Changes to the 2020 HMP Goals and Objectives	
Goal/Objective	Comments
5.4 Evaluate and update existing floodplain ordinances.	Renumbered to Objective 5.3 and revised to, "ordinances and regulations."
Goal 6: Reduce or redirect the impact of natural disasters (especially floods) away from at-risk population areas.	
6.1 Research possible mitigation projects to reduce flooding, reduce/eliminate sewage leakage and inflow/infiltration problems.	Moved Objective 6.1 to Goal 5 as Objective 5.4. Removed Goal 6.
Goal 7: Protect existing natural resources and open space, including parks and wetlands, within the floodplain and watershed to improve their flood control function.	
7.1 Implement cost-effective and technically feasible mitigation projects.	Continued to 2025 HMP.
7.2 Utilize recreation planning and stormwater management planning.	Removed due to references to stormwater under Goal 6.
Goal 8: Reduce the risks posed by the potential failure of HHPDs within the County.	
8.1 Maintain Emergency Action Plans for all HHPDs.	Added to 2025 HMP.
8.2 Collect and continually improve GIS data and records of dams in the County.	Added to 2025 HMP.
8.3 Direct new development away from high hazard areas, especially high-hazard dams.	Moved from Goal 5 in 2020 HMP to Goal 8 in 2025 HMP.

6.1.2. Mitigation Action Review

There were 60 actions identified in the 2020 HMP. Mitigation actions identified and included in the 2020 Plan were distributed at the Mitigation Strategy and Capability Assessment Meeting held in November 2024. Each municipality, the County, and stakeholders were provided with a Mitigation Action Progress Form where communities and stakeholders were asked to indicate the status of each action.

Based on these forms, each 2020 mitigation action has been assigned one of the following categories:

- "Completed" - Actions that were completed since the adopted of the 2020 Plan.
- "Cancelled" - Actions that were terminated.
- "Deferred" - Actions that had not been initiated since the adoption of the 2020 Plan.

- “On-Going” – Actions that are performed on a regular and continual basis by the department.

Most of the existing mitigation actions have been carried over into this 2025 HMP as many actions are continuous or have not yet been completed. A list of the 2020 actions and their status is included in Table 6.1-2. The status of each action was evaluated with the intent of creating a usable mitigation action plan for 2020 with actions and projects that could be completed over the next five years. [Appendix C](#) includes responses provided by stakeholders on the Mitigation Action Progress Forms.

Table 6.1-2 Review of 2020 Mitigation Actions

Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
1	ACTION: To develop a "how to" mitigation display that can be used at special events. This display would include pictures and information, such as that contained in FEMA's Retrofitting for Homeowners Guide, Elevating Your Flood prone Home, Elevating Residential Structures, and Information on the NFIP.	Venango County		X		
2	ACTION: To develop an Animals In Disaster Display that will be used at 4-H Clubs, Agricultural Fair, in Veterinarians Offices and other places that animal owners may gather. The display will have information about preparing animals for disasters by making a disaster plan and a disaster supply kit for each animal. The display will encourage animal owners to decide ahead of time where animals will be sheltered and to familiarize them with the County's Animals in Disaster Annex of the Emergency Operations Plan.	Venango County		X		
3	ACTION: Create displays for children's programs that teach hazard prevention and safety. Examples of information to be used would be similar to that on the FEMA for Kids CD, Sparky Fire Safety Program, and Smokey Bear.	Venango County	X			
4	ACTION: Send press releases to local newspapers, radio and TV stations about hazard mitigation information and ideas. Design to reach all areas of Venango County. TV	Venango County	X			

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
	stations about hazard mitigation information and ideas.					
5	ACTION: Public Speaking series to include topic such as types of natural disasters and risks, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple types of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups, etc. Coordination with state agencies such as DCNR-BOF as needed.	Venango County				X
6	ACTION: The American Red Cross will continue to hold a variety of courses, including: Adult and Child CPR, Basic First Aid, Introduction to Disaster Services, Mass Care, Shelter Operations and others at the Red Cross Office and at other locations throughout the County.	Venango County	X			
7	ACTION: Update Venango County website to provide resources regarding hazard mitigation.. The plan is to expand and update the website as needed and as appropriate in a timely manner to provide county residents with simple and effective mitigation ideas.	Venango County	X			

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
8	ACTION: Property owners will be provided with hazard mitigation resources via an annual municipal newsletter.	Allegheny Township				X
9	ACTION: To work with the American Red Cross towards upgrading all shelter resources and ensuring that any new shelters are sited outside of hazard prone areas	Cranberry Township; Oakland Township, Oil City, Sandycreek Township; Utica Borough				X
10	ACTION: West Central PA Red Cross and Venango County EMA to hold an annual work session to share information about local shelters. Information to include the site of each shelter, how many people it can house and feed, if it has back-up power available on site, completed site survey forms and types of resources that they have or that they need. This will benefit all areas of Venango County in the event of the need to open shelters.	Oil City				X
11	ACTION: Establish a committee representative of all areas of the County that will include vets, pet store owners, the Humane Society, animal shelters, the Extension Service and other interested parties to work on animal-specific evacuation and sheltering needs.	Venango County	X			
12	ACTION: Venango County Emergency Services Director to develop and make available information to all county residents, through community groups and/or publications,	Venango County		X		

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
	information on how to shelter in place and when it is appropriate to do so.					
13	ACTION: Publicize locations of shelters with improved shelter signage and through public information campaigns.	Venango County			X	
14	ACTION: Provide CERT classes to interested citizens in Venango County to assist first responders at specified emergencies throughout the county. Project Impact Coordinator to take the CERT Train the Trainer Course to assist with training in the County. Additional trainers need to attend future Train the Trainer Courses.	Cornplanter Township; Venango County		X (Venango County)		X
15	ACTION: To meet with groups of potential volunteers to attempt increase the number of trained responders for: All County Fire Departments, doctors and nurses who may become first responders in a bio-terrorism event, EMS personnel, etc. Will benefit all areas of Venango County.	Barkeyville Borough, Cornplanter Township				X
16	ACTION: Venango Emergency Services Director to develop and manage disaster exercises in various areas of the county. Types of exercises to include: Flood exercise, Weapons of Mass Destruction Exercise, Hazardous Materials Spill Exercise, High Winds, Wildfire, Winter Storm and Bio-Terrorism Exercise.	Venango County		X		

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
17	ACTION: Review and update all annexes of the Venango County Emergency Operations Plan. Encourage participation from all municipalities in update process.	Venango County	X			
18	ACTION: Replace Fisherman's Cove Bridge and secure sections of the roadway abutting the stream to allow emergency access and evacuation.	Victory Township	X			
19	ACTION: To work with FEMA and PEMA to get updated repetitive loss information on properties in the County and in the municipalities in order to plan future mitigation activities.	Rouseville Borough				X
20	ACTION: Develop a database of existing GIS system of all repetitive loss properties in the County to be used in future mitigation activities.	Venango County		X		
21	ACTION: When funds become available for mitigation projects, the Borough will hold a series of public meetings with the owners of repetitive loss properties in high-risk areas. These meetings will also be used to identify high-risk properties in the unincorporated areas of the County and to determine potential participation in future acquisition and relocation projects.	Rouseville Borough				X
22	ACTION: Work with municipal leaders to identify roadways with frequent flooding. Share information with PennDOT and work cooperatively to develop strategies to mitigate the identified problems.	City of Franklin, Oil City				X

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
23	ACTION: Contact representatives of rail lines to collect information about emergency planning and risks associated with rail services in the County.	Venango County		X		
24	ACTION: Conduct a Hazardous Materials Survey to identify all hazardous materials that are either stored or traveling through the County and its municipalities.	Venango County			X	
25	ACTION: Encourage municipal offices to review regulations pertaining to their jurisdiction to make sure that adequate zoning regulations are in place to reduce future development in high hazard areas in their jurisdiction. Planning department to review Subdivision and Land Development Ordinance.	Venango County, Allegheny Township, Canal Township, Cherrytree Township, Clintonville Borough, Cooperstown Borough, Cornplanter Township, Cranberry Township, Emlenton Borough, City of Franklin, Irwin Township, Jackson Township, Mineral Township, Pinegrove Township, Pleasantville Borough, Plum Township, Polk Borough, President Township, Richland Township, Sandycreek Township, Scrubgrass	X (Allegheny Twp.)	X (Venango County)		X (Venango County)

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
		Township, Sugarcreek Borough, Utica Borough, Victory Township				
26	ACTION: Planning department and applicable municipal offices to review their comprehensive plans to ensure that designated growth areas are not in high hazard areas identified in this plan.	Venango County, City of Franklin	X (Venango County)			X
27	ACTION: Municipal offices to review statewide Uniform Construction Code to ensure enforcement thereof.	Venango County, Cornplanter Township, Cranberry Township, Emlenton Borough, City of Franklin, Frenchcreek Township, Oil City, Sandycreek Township		X (Venango County)		X
28	ACTION: Encourage applicable municipal offices to review their capital improvement plans to ensure that programmed infrastructure improvements are not in high hazard areas.	Venango County	X			
29	ACTION: Identify and mitigate areas of frequent flooding	Cornplanter Township				X
30	ACTION: Venango County EMA to arrange with FEMA/DCED to conduct training on the	Venango County		X		

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
	Community Rating System (CRS) for municipalities with highest number of policies.					
31	ACTION: Continue to produce and submit Mitigation Projects for high-risk structures/areas (especially post-disaster).	Venango County, Oil City: Venango County, Allegheny Township, Canal Township, Cherrytree Township, Clintonville Borough, Cooperstown Borough, Cornplanter Township, Cranberry Township, Emlenton Borough, City of Franklin, Irwin Township, Jackson Township, Mineral Township, Pinegrove Township, Pleasantville Borough, Plum Township, Polk Borough, President Township, Richland Township, Sandycreek Township, Scrubgrass Township, Sugarcreek Borough, Utica Borough, Victory Township	X (Sugarcreek Borough ; Venango County)			X

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
32	ACTION: Acquire and demolish repetitive loss structures on Sage Run in Oil City and Cranberry Township.	Venango County, Cranberry Township, Oil City			X	
33	ACTION: Work with DEP, conservation agencies, park and recreation organizations, wildlife groups and other appropriate agencies to collect information including GIS of the number and location of natural resource areas throughout the County.	Venango County		X		
34	ACTION: Identify and mitigate frequently flooded roads.	Canal Township				X
35	ACTION: When funds become available for mitigation projects, the county plans to hold meetings to identify high-risk properties in the county and to determine potential participation in future acquisition and relocation projects.	Venango County, Sandycreek Township	X (Venango County)			X
36	ACTION: Review and update all annexes the City of Franklin's Emergency Operations Plan.	City of Franklin				X
37	ACTION: County to work with DEP, DCNR, conservation agencies, and others, to research avenues for restoring degraded natural resources and open space to improve their flood control functions.	Venango County		X		
38	ACTION: Mitigate repetitive loss properties associated with flood sources: Chubbs, Davis, and Smith Runs	City of Franklin				X

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
39	ACTION: Implement redundancy in critical infrastructure, should a disaster occur that it does not affect all residents and/or businesses (water, sewer, transportation (traffic management), electric, natural gas pipelines, communications (Public and Emergency Services).	City of Franklin				X
40	ACTION: Develop a "how to protect a home from wildfires" display with information on defensible space and Firewise.	Venango County		X		
41	ACTION: Issue press release prior to spring (or fall) wildfire season.	Venango County		X		
42	ACTION: Consider developing a Community Wildfire Protection Plan.	Venango County		X		
43	ACTION: Work with local volunteer fire departments and county EMA to identify areas of high value/high wildfire risk and work to implement Firewise mitigation strategies.	Venango County	X			
44	ACTION: As part of the plan maintenance process, assess how effective mitigation strategy actions are at mitigating losses through a review of the qualitative and quantitative benefits (or avoided losses) of each action.	Venango County		X		
45	ACTION: Develop a shelter in place plan.	Utica Borough				X
46	ACTION: Replace damaged culverts, add catch basins, and install cross pipes to relieve stormwater.	Clinton Township				X

Table 6.1-2 Review of 2020 Mitigation Actions						
Action Number	2020 HMP	Municipality	Status			
			Completed	Cancelled	Deferred	Ongoing
47	ACTION: Increase public awareness and more effectively publicize wildfire danger times and threats.	Bureau of Forestry				X
48	ACTION: Develop awareness and educate the public on wildland/urban interface. Develop incentives for property owners to develop and maintain defensible space around their structures. Including encouraging the use of non-combustible materials & technology (FIREWISE) when building or renovating structures.	Bureau of Forestry				X
49	ACTION: Survey county and determine those areas at highest risk for wildfires. Develop pre-planning for these areas should a wildfire occur.	Bureau of Forestry				X
50	ACTION: Incorporate hazard mitigation into school curriculum where possible.	Bureau of Forestry				X

6.1.3. Mitigation Successes

A wide variety of progress has been made on hazard mitigation projects and actions within the last five years. Details on actions marked as “completed” or “ongoing” are summarized below:

Flood Mitigation Successes

- The City of Franklin and the City of Oil city are continuing to work with municipal leaders to identify roadways with frequent flooding. They are sharing information with PennDOT and continuing to work cooperatively to develop strategies to mitigate the identified problems.
- The City of Franklin is also mitigating repetitive loss properties associated with flood sources: Chubbs, Davis, and Smith Runs. The City is continuously working to establish redundancy in critical infrastructure, should a disaster occur. This is preventing the effects of flooding to the residents and/or businesses. This includes potential effects to water, sewer, transportation (traffic management), electric, natural gas pipelines, communications (Public and Emergency Services).
- Cornplanter Township is continuing to identify and mitigate areas of frequent flooding in their Township.
- Canal Township is working to identify and mitigate frequently flooded roads in their area by stormwater management projects, floodplain administration, and improvement projects for high-risk structures.
- Clinton Township is in the process of replacing damaged culverts, adding catch basins, and installing cross pipes to relieve stormwater to prevent flooding in the Township.
- Cherrytree Township is seeking funding from the state or federal governments used for floodplain enforcement in the area.
- Permits for discharges of stormwater associated with construction activities in compliance with the provisions of the clean water act in President Township have been authorized. The benefit of authorizing the permit is to protect water quality, erosion and sediment control on construction sites, ensure compliance with federal regulations, increase public health and safety.
- To mitigate washout from flooding due to heavy rainfall, Rockland Township and Rouseville Borough is focused on improving drainage systems, implementing erosion control measures like vegetation and mulching, constructing retaining walls and terraces to reduce slope and slow water flow, using permeable surfaces to allow water infiltration, and creating rain gardens and bioswales to capture and absorb stormwater. Regular maintenance of these measures ensures their effectiveness and helps protect your property from the impacts of heavy rainfall.

- Sugarcreek Borough is in the process of ensuring all properties located in flood zones are in compliance with code and meet all properties according to FEMA.

Pandemic Successes

- Venango County Office of Emergency Services equipped municipalities, small businesses and other organizations with PPE to proactively mitigate the spread of COVID-19.
- Venango County Office of Emergency Services coordinated with the Pennsylvania Department of Health to establish COVID-19 testing and vaccination sites. They also worked to make the public aware of the availability of the COVID-19 vaccine.

Utility Interruption Successes

- Venango County has been actively pursuing alternative energy projects to enhance energy resilience and promote sustainable development. One notable initiative is the Communities LEAP Initiative, which focuses on designing a pilot 3-5 megawatt (MW) semi-islanded microgrid with battery backup. This project aims to provide clean, reliable energy to Venango County residents and create a regional supply chain for microgrid components. The initiative is expected to span 12-18 months and promises to be transformative for the community.

Wildfire and Urban Fire Mitigation Successes

- Venango County has conducted community education and outreach programs to raise awareness about fire safety and prevention. These programs aim to educate residents on how to protect their homes and properties from fire hazards.
- Oil City has enhanced its fire response capabilities through training programs, equipment upgrades, and community outreach efforts. These initiatives aim to improve fire safety and preparedness within the city.
- Franklin has focused on community education and outreach programs to raise awareness about fire prevention and safety. These programs include fire drills, safety workshops, and distribution of fire safety materials.
- Cranberry Township has implemented vegetation management projects to reduce the risk of wildfires. This includes clearing brush and maintaining firebreaks to prevent the spread of fires.

Planning and Regulatory Success

- The City of Franklin as well as Venango County review their comprehensive plans to ensure that designated growth areas are not in high hazard areas identified in this plan.
- All municipal offices in Venango County continue to review statewide Uniform Construction Code to ensure enforcement thereof.
- The City of Franklin continues to review and update all annexes the City of Franklin's Emergency Operations Plan as needed.
- The Venango County Regional Planning Commission has updated their

Structure and Infrastructure Successes

- Venango County municipalities are continuing to produce and submit Mitigation Projects for high-risk structures/areas (especially post-disaster).
- Rouseville Borough is continuing to work with FEMA and PEMA to get updated repetitive loss information on properties in the County and in the municipalities in order to plan future mitigation activities.
- When funds become available for mitigation projects, the county holds meetings to identify high-risk properties in the county and to determine potential participation in future acquisition and relocation projects.

Emergency Response Successes

- Venango County is continuously engaging the public through webinar series to include topic such as types of natural disasters and risks, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple types of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups, etc. Coordination with state agencies such as DCNR-BOF as needed.
- Property owners will be provided with hazard mitigation resources via an annual Allegheny Township municipal newsletter.
- Cornplanter Township and The County will continue to provide CERT classes to interested citizens in Venango County to assist first responders at specified emergencies throughout the county. Project Impact Coordinator to take the CERT Train the Trainer Course to assist with training in the County. Additional trainers need to attend future Train the Trainer courses.
- Barkeyville Borough and Cornplanter Township will continue to meet with groups of potential volunteers to attempt increase the number of trained responders for: All County Fire Departments, doctors and nurses who may become first responders in a bio-terrorism event, EMS personnel, etc.

- When funds become available for mitigation projects, Rouseville Borough will hold a series of public meetings with the owners of repetitive loss properties in high-risk areas. These meetings will also be used to identify high-risk properties in the unincorporated areas of the County and to determine potential participation in future acquisition and relocation projects.
- All the Venango County Municipalities are continuing to encourage municipal offices to review regulations pertaining to their jurisdiction to make sure that adequate zoning regulations are in place to reduce future development in high hazard areas in their jurisdiction. Planning department to review Subdivision and Land Development Ordinance.
- The Bureau of Forestry works to increase public awareness and more effectively publicize wildfire danger times and threats. They develop awareness and educate the public on wildland/urban interface. In addition, they have created incentives for property owners to develop and maintain defensible space around their structures. Including encouraging the use of non-combustible materials & technology (FIREWISE) when building or renovating structures.

Community Development Block Grant (CDBG) Funded Projects

- Venango County has successfully secured CDBG funding for multiple projects. Projects that are being executed are outlined in the table below.

Year	Project Name	Status
2013	Community Services of Venango County, Continuum of Care Program	\$56,925.00
2014	Community Services of Venango County, Continuum of Care Program	\$57,350.00
2015	Community Services of Venango County, Continuum of Care Program	\$58,638.00
2016	Venango County, Shelter Plus Care	\$53,619.00
2016	Community Services of Venango County, Continuum of Care Program	\$58,638.00
2017	Venango County, Shelter Plus Care	\$58,131.00
2017	Community Services of Venango County, Continuum of Care Program	\$59,965.00
2018	Venango County, Shelter Plus Care	\$58,611.00
2018	Community Services of Venango County, Continuum of Care Program	\$61,787.00

6.2 2025 MITIGATION GOALS AND OBJECTIVES

Based on results of the goals and objectives evaluation exercise and input from the County, it was confirmed that the 2020 goals and objectives still align with the County's vision. Table 6.2-1 details the mitigation goals and objectives re-established for the 2025 plan.

Table 6.2-1 2025 Venango County Goals and Objectives	
Goal	Objectives
Goal 1 Increase public awareness regarding natural and manmade hazard risks, preparedness and mitigation.	1.1 Educate residents about hazard mitigation resources and grants.
	1.2 Utilize the media for the distribution and publication of hazard information.
	1.3 Provide educational materials and conduct workshops for residents.
	1.4 Provide access to hazard and mitigation and emergency response resources to residents.
Goal 2 Ensure that adequate shelter is available to current and future populations.	2.1 Ensure that all shelters have adequate emergency power resources.
	2.2 Establish a protocol for the sharing of annual shelter survey information.
	2.3 Publicize locations of shelters.
Goal 3 Identify all RL structures throughout the County.	3.1 Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.
Goal 4 Develop better hazard data for Venango County and the municipalities.	4.1 Identify existing hazard data limitations and gaps.
	4.2 Develop and maintain a County hazard log.
Goal 5 Attempt to reduce the current and future risk of flood damage in Venango County.	5.1 Adopt and enforce statewide Uniform Construction Code (UCC).
	5.2 Ensure that infrastructure improvements are not directed towards hazardous areas.
	5.3 Evaluate and update existing floodplain ordinances and regulations.
	5.4 Research possible mitigation projects to reduce flooding, reduce/eliminate sewage leakage and inflow/infiltration problems.
Goal 6 Protect existing natural resources and open space, including parks and wetlands, within the floodplain and watershed to improve their flood control function.	6.1 Implement cost-effective and technically feasible mitigation projects.

Table 6.2-1 2025 Venango County Goals and Objectives

Goal	Objectives
Goal 7 Reduce the risks posed by the potential failure of HHPDs within the County.	7.1 Maintain Emergency Action Plans for all HHPDs.
	7.2 Collect and continually improve GIS data and records of dams in the County.
	7.3 Direct new development away from high hazard areas, especially high hazard dams.

6.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

The Mitigation Strategy in the updated HMP should include analysis of a comprehensive range of specific techniques or actions. FEMA, through the March 2023 Local Mitigation Handbook, and PEMA, through the 2020 Standard Operating Guide, identify four categories of hazard mitigation techniques.

Local plans and regulations: Government authorities, policies, or codes that influence the way land and buildings are developed and built. Examples include, but are not limited to, comprehensive plans, subdivision regulations, building codes and enforcement, and the NFIP and CRS.

Structure and infrastructure: Modifying existing structures and infrastructure or constructing new structures to reduce hazard vulnerability. Examples include, but are not limited to, acquisition and elevation of structures in flood prone areas, utility undergrounding, structural retrofits, floodwalls and retaining walls, detention and retention structures, and culverts.

Natural systems protection: Actions that minimize damage and losses and preserve or restore the functions of natural systems. Examples include, but are not limited to, sediment and erosion control, stream corridor restoration, forest management, conservation easements, and wetland restoration and preservation.

Education and awareness: Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate the hazards and may also include participation in national programs. Examples include, but are not limited to, radio or television spots, websites with maps and information, provide information and training, NFIP outreach, StormReady, and Firewise Communities.

Table 6.3-1 provides a matrix identifying the mitigation techniques used for the hazards identified in the Risk Assessment. The specific actions associated with these techniques are included in Table 6.4-1 in the next section.

Table 6.3-1: Mitigation Techniques for All Hazards in Venango County					
Hazard (In Order of Risk Factor Ranking)		Mitigation Technique			
		Plans and Regulations	Structure and Infrastructure	Natural Systems Protection	Education and Awareness
HIGH	EH - Hazardous Materials Release (M)	X	X		X
	Winter Storm (N)	X	X		X
	Utility Interruption (M)	X	X		X
	Tornado / Windstorm (N)	X	X		X
MODERATE	Dam Failure (M)	X	X		X
	EH - Conventional Oil and Gas Wells (M)	X	X		X
	EH - Unconventional Oil and Gas (M)	X	X		X
	Flood, Flash Flood, Ice Jam (N)	X	X	X	X
	Pandemic and Infectious Disease (N)	X			X
	Transportation Accidents (M)	X	X		X
	Wildfire (N)	X	X		X
	EH - Coal Mining (M)	X	X		X
	Drought (N)	X	X		X
LOW	Cyber Terrorism (M)	X	X		X
	Radon Exposure (N)	X			X
	Hurricane, Tropical Storm, and Nor'easter (N)	X	X	X	X
	Earthquake (N)	X	X		X
	Civil Disturbance (M)	X			X
	Landslide (N)	X	X		X

Table 6.3-2 provides a matrix identifying which municipalities have mitigation actions for each of hazards identified in the Risk Assessment. Each municipality has one action for all high risk hazards, and for all medium and low risk hazards that they have identified as impacting them. This is identified in table 4.4-3. Table 4.4-3 shows the different municipalities in Venango County and whether their risk is greater than (>), less than (<), or equal to (=) the risk factor assigned to the County as a whole. Each municipality has a mitigation action for any hazards identified as greater than or equal to the risk factor of the County. The specific actions associated with these techniques are included in Table 6.4-1 in the next section.

Table 6.3-2: Mitigation Techniques for All Hazards in Venango County

	EH - Hazardous Materials Release	Winter Storm	Utility Interruption	Tornado / Windstorm	Dam Failure	EH - Conventional Oil and Gas Wells (M)	EH - Unconventional Oil and Gas (M)	Flood, Flash Flood, Ice Jam	Pandemic and Infectious Disease	Transportation Accidents	Wildfire	EH - Coal Mining (M)	Drought	Cyber Terrorism	Radon Exposure	Hurricane, Tropical Storm, and Nor'easter	Earthquake	Nuclear Incidents (Radon)	Civil Disturbance	Landslide
Allegheny Township	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Barkeyville Borough	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Canal Township	>	>	>	>	X	=	=	X	<	>	X	=	>	>	=	X	X	>	>	X
Cherrytree Township	>	<	<	<	X	=	=	X	=	>	X	=	<	>	>	X	X	>	>	X
Clinton Township	<	<	=	>	X	=	=	X	<	<	X	=	>	>	=	X	X	>	>	X
Clintonville Borough	>	<	<	<	X	=	=	X	=	<	X	=	<	>	=	X	X	<	>	X
Cooperstown Borough		<	=	>	X	=	=	X	=	>	X	=	>	>	=	X	X	>	>	X
Cornplanter Township	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cranberry Township	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emlenton Borough	<	>	<	>	X	=	=	X	=	>	X	=	>	<	=	X	X	>	<	X
Franklin, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Frenchcreek Township	=	<	<	<	X	=	=	X	=	=	X	=	<	>	=	X	X	<	>	X
Irwin Township	<	>	>	>	X	=	=	X	=	>	X	=	>	>	=	X	X	>	>	X
Jackson Township	>	>	>	>	X	=	=	X	=	>	X	=	>	>	=	X	X	>	>	X

Table 6.3-2: Mitigation Techniques for All Hazards in Venango County

	EH - Hazardous Materials Release	Winter Storm	Utility Interruption	Tornado / Windstorm	Dam Failure	EH - Conventional Oil and Gas Wells (M)	EH - Unconventional Oil and Gas (M)	Flood, Flash Flood, Ice Jam	Pandemic and Infectious Disease	Transportation Accidents	Wildfire	EH - Coal Mining (M)	Drought	Cyber Terrorism	Radon Exposure	Hurricane, Tropical Storm, and Nor'easter	Earthquake	Nuclear Incidents (Radon)	Civil Disturbance	Landslide
Mineral Township	<	<	<	<	X	=	=	X	=	<	X	=	>	>	=	X	X	<	>	X
Oakland Township	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oil City, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oil Creek Township	>	>	=	<	X	=	=	X	=	<	X	=	<	>	>	X	X	>	>	X
Pinegrove Township	=	=	=	=	X	=	=	X	=	=	X	=	=	=	=	X	X	=	=	X
Pleasantville Borough	>	>	=	<	X	=	=	X	=	>	X	=	<	>	>	X	X	>	>	X
Plum Township	>	<	=	>	X	=	=	X	=	=	X	=	<	=	>	X	X	>	=	X
Polk Borough	=	<	<	<	X	=	=	X	=	<	X	=	>	<	>	X	X	<	>	X
President Township	X	=	=	=	X	X	X	X	=	=	X	=	=	=	>	X	X	=	=	X
Richland Township	<	>	=	>	X	=	=	X	=	=	X	=	<	<	=	X	X	>	>	X
Rockland Township	<	>	>	>	X	=	=	X	=	=	X	=	>	<	>	X	X	>	>	X
Rouseville Borough	=	>	>	>	X	=	=	X	=	<	X	=	>	<	=	X	X	<	>	X
Sandycreek Township	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Scrubgrass Township	<	>	>	>	X	=	=	X	=	<	X	=	<	>	=	X	X	>	>	X
Sugarcreek Borough	=	>	>	>	X	=	=	X	=	>	X	=	>	>	=	X	X	>	>	X
Utica Borough	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 6.3-2: Mitigation Techniques for All Hazards in Venango County

	EH - Hazardous Materials Release	Winter Storm	Utility Interruption	Tornado / Windstorm	Dam Failure	EH - Conventional Oil and Gas Wells (M)	EH - Unconventional Oil and Gas (M)	Flood, Flash Flood, Ice Jam	Pandemic and Infectious Disease	Transportation Accidents	Wildfire	EH - Coal Mining (M)	Drought	Cyber Terrorism	Radon Exposure	Hurricane, Tropical Storm, and Nor'easter	Earthquake	Nuclear Incidents (Radon)	Civil Disturbance	Landslide
Victory Township	<	<	<	<	X	=	=	X	=	>	X	=	>	>	=	X	X	>	>	X

6.4 MITIGATION ACTION PLAN

Mitigation actions have been carried over from the 2020 Plan and have been newly developed for the County and participating jurisdictions. While some actions are more general in nature and could apply to more than one jurisdiction, other actions are specific to individual projects or jurisdictions. Mitigation actions were developed based on the following: issues identified in the Risk Assessment, gaps identified in the mitigation capability analysis, input from HMSC, and feedback from the HMPT.

During the Mitigation Strategy and Capability Assessment Workshops held from September to October, mitigation techniques and actions were discussed. After the meeting, municipalities were provided their Mitigation Action Progress Form, which listed their actions and projects from the 2020 HMP for review and update as described in Section 6.1. Actions that have been deferred or ongoing have been carried over to the 2025 Action Plan and are again proposed for implementation.

In addition, each participating jurisdiction was given New Mitigation Action Forms to provide any new actions or projects to be included in the plan update. New Mitigation Action Forms were also posted to the project website and set out via email. Meeting participants who were not affiliated with a municipality, organization or agency that had any actions identified in the 2020 plan were provided with New Mitigation Action Forms to include new actions in the 2025 Plan if they so wished.

The final list of **42 mitigation actions** is described in Table 6.4-1 below. This table provides an overview of the strategy that will be utilized in order to implement each of the proposed mitigation actions. For each action listed in the table, the associated strategy identifies the agency or job title that will be responsible for initiating the work and potential sources of funding for the work. Each strategy also indicates a timeframe for when the action will happen. Every participating jurisdiction has at least one mitigation action for each hazard they have identified as being a risk (see Table 6.3-2).

Many of these mitigation actions will require substantial time commitments from staff at the County and local municipalities. While all these activities will be pursued over the next five years, the reality of limited time and resources requires the identification of the feasibility and priority level of mitigation actions. Prioritization allows the individuals and organizations involved to focus their energies and ensure progress on mitigation activities.

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
Goal 1: Increase public awareness regarding natural and manmade hazard risks, preparedness and mitigation							
1.1.1	Public Speaking series to include topic such as types of natural disasters and risks, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple types of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups, etc. Coordination with state agencies such as DCNR-BOF as needed.	Venango County	Education and Awareness	All Hazards	Venango EMA	5 Years	Staff Time (State, County, Local)
1.2.1	Property owners will be provided with hazard mitigation resources via an annual municipal newsletter.	Allegheny Township	Education and Awareness	All Hazards	Allegheny Township	Ongoing	Township
1.3.1	Provide CERT classes to interested citizens in Venango County to assist first responders at specified emergencies throughout the county. Project Impact Coordinator to take the CERT Train the Trainer Course to assist with training in the County. Additional trainers need to attend future Train the Trainer courses.	Cornplanter Township; Venango County	Education and Awareness	All Hazards	Township, Venango County EMA	Ongoing	Staff Time (State, County, Local)

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
1.3.2	To meet with groups of potential volunteers to attempt to increase the number of trained responders for: All County Fire Departments, doctors and nurses who may become first responders in a bio-terrorism event, EMS personnel, etc. Will benefit all areas of Venango County.	Barkeyville Borough, Cornplanter Township	Education and Awareness	Environmental Hazards, Terrorism	Barkeyville Borough, Cornplanter Township	Ongoing	Staff Time (State, County, Local)
1.3.3	When funds become available for mitigation projects, the Borough will hold a series of public meetings with the owners of repetitive loss properties in high-risk areas. These meetings will also be used to identify high-risk properties in the unincorporated areas of the County and to determine potential participation in future acquisition and relocation projects.	Rouseville Borough	Education and Awareness	Flood, Hurricane, Tropical Storm, Nor'easter	Rouseville Borough	Ongoing	Borough
1.4.1	Increase public awareness and more effectively publicize wildfire danger times and threats.	Bureau of Forestry	Education and Awareness	Wildfire	All Municipalities	TBD	
1.4.2	Develop awareness and educate the public on wildland/urban interface. Develop incentives for property owners to develop and maintain defensible space around their structures. Including encouraging the use of non-combustible materials & technology (FIREWISE) when building or renovating structures.	Bureau of Forestry	Education and Awareness	Wildfire	All Municipalities	TBD	FIREWISE program; grants for defensible space in communities
1.4.3	Incorporate hazard mitigation into school curriculum where possible	Bureau of Forestry	Education and Awareness	All Hazards	Local School Districts;	TBD	TBD

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
					County VoTech Program		
1.4.4	Enhance hazard awareness of the private sector, particularly lenders, insurance agents, and realtors.	Venango County	Education and Awareness	All Hazards	All Municipalities	TBD	TBD
1.4.5	Encourage municipal offices to review regulations pertaining to their jurisdiction to make sure that adequate zoning regulations are in place to reduce future development in high hazard areas in their jurisdiction. Planning department to review Subdivision and Land Development Ordinance.	Venango County	Local Plans and Regulations, Education and Awareness	All Hazards	Planning Commission	Ongoing	Staff Time
Goal 2: Ensure that adequate shelter is available to current and future populations.							
2.1.1	To work with the American Red Cross towards upgrading all shelter resources and ensuring that any new shelters are sited outside of hazard prone areas	Cranberry Township; Oakland Township, Oil City, Sandycreek Township; Utica Borough	Structure and Infrastructur e; Local Plans and Regulations	All Hazards	Venango EMA, American Red Cross	5 Years	County; HUD- ESG
2.2.1	West Central PA Red Cross and Venango County EMA to hold an annual work session to share information about local shelters. Information to include the site of each shelter, how many people it can house and feed, if it has back-up power available on site, completed site survey forms and types of resources that they have or that they need. This will benefit all areas of Venango County in the event of the need to open shelters.	Oil City	Education and Awareness	All Hazards	City of Oil City, Venango County EMA	Ongoing	Staff Time

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
2.3.1	Develop a shelter in place plan.	Utica Borough	Local Plans and Regulations	Winter Storm	Utica Borough and Fire Department	TBD	TBD but Quote for MRE's for 200 residents for 2 weeks was \$44,520 from MRE Star, LLC
Goal 3: Identify all repetitive loss structures throughout the County.							
3.1.1	To work with FEMA and PEMA to get updated repetitive loss information on properties in the County and in the municipalities in order to plan future mitigation activities.	Rouseville Borough	Local Plans and Regulations	Flood, NFIP, Hurricane, Tropical Storm, Nor'easter	Rouseville Borough	Ongoing	Borough
3.1.2	Continue to produce and submit Mitigation Projects for high-risk structures/areas (especially post-disaster).	Venango County, Oil City: Venango County, Allegheny Township, Canal Township, Cherrytree Township, Clintonville Borough, Cooperstown Borough, Cornplanter Township, Cranberry Township, Emlenton Borough, City of	Structure and Infrastructur e	Flooding; All Hazards	Venango County, Oil City: Venango County, Allegheny Township, Canal Township, Cherrytree Township, Clintonville Borough, Cooperstown Borough, Cornplanter Township, Cranberry Township,	Ongoing	Staff Time; HMGP; Non- disaster Funds; FMA

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
		Franklin, Irwin Township, Jackson Township, Mineral Township, Pinegrove Township, Pleasantville Borough, Plum Township, Polk Borough, President Township, Richland Township, Sandycreek Township, Scrubgrass Township, Sugarcreek Borough, Utica Borough, Victory Township			Emlenton Borough, City of Franklin, Irwin Township, Jackson Township, Mineral Township, Pinegrove Township, Pleasantville Borough, Plum Township, Polk Borough, President Township, Richland Township, Sandycreek Township, Sugarcreek Borough, Utica Borough, Victory Township		

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
3.1.3	When funds become available for mitigation projects, the county plans to hold meetings to identify high-risk properties in the county and to determine potential participation in future acquisition and relocation projects.	Venango County, Sandycreek Township	Education and Awareness	Flood, Hurricane, Tropical Storm, Nor'easter	Venango Planning Commission	3 yrs.	County; Staff Time
3.1.4	Mitigate repetitive loss properties associated with flood sources: Chubbs, Davis, and Smith Runs.	City of Franklin	Structure and Infrastructur e	Flood, Hurricane, Tropical Storm, Nor'easter	City of Franklin	5 yrs	HMGP; Non- disaster Funds; FMA
Goal 4: Develop better hazard data for Venango County and the municipalities.							
4.1.1	Planning department and applicable municipal offices to review their comprehensive plans to ensure that designated growth areas are not in high hazard areas identified in this plan.	Venango County, City of Franklin	Local Plans and Regulations	Dam Failure, Flood, Earthquak e, Landslide, Wildfire, Winter Storm, Hurricane, Tropical Storm, Nor'easter	Venango Planning Commission	Ongoing	Staff Time
4.1.2	Encourage municipal offices to review regulations pertaining to their jurisdiction to make sure that adequate zoning regulations are in place to reduce future development in high hazard areas in their jurisdiction. Planning	Venango County, Allegheny Township, Canal Township, Cherrytree	Local Plans and Regulations	Dam Failure, Flood, Earthquak e,	Venango Planning Commission	Ongoing	Staff Time (State, County, Local)

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
	department to review Subdivision and Land Development Ordinance.	Township, Clintonville Borough, Cooperstown Borough, Cornplanter Township, Cranberry Township, Emlenton Borough, City of Franklin, Irwin Township, Jackson Township, Mineral Township, Pinegrove Township, Pleasantville Borough, Plum Township, Polk Borough, President Township, Richland Township, Sandycreek Township, Scrubgrass Township,		Landslide, Wildfire, Hurricane, Tropical Storm, Nor'easter			

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
		Sugarcreek Borough, Utica Borough, Victory Township					
4.1.3	Review and update all annexes the City of Franklin's Emergency Operations Plan.	City of Franklin	Local Plans and Regulations	All Hazards	City of Franklin	2 yrs.	Municipal
4.2.1	Survey county and determine those areas at highest risk for wildfires. Develop pre-planning for these areas should a wildfire occur.	Bureau of Forestry	Local Plans and Regulations	Wildfire	Fire Departments; Bureau of Forestry	TBD	FIREWISE program; Community Wildfire Protection Program (CWPP)
4.2.2	Inventory and equip critical facilities with backup power generators.	Venango County	Structure and Infrastructur e	All Hazards	All Municipalities	TBD	Staff Time
4.2.3	Assess wind resistance of critical facilities and shelters.	Venango County	Structure and Infrastructur e	Tornado, Earthquak e, Hurricane, Tropical Storm, Nor'easter	All Municipalities	5 yrs.	Staff Time
4.2.4	Enhance impact analysis for high-risk hazards such as winter storm and tornado/windstorms.	Venango County	Structure and Infrastructur e	Winter Storm, Flood, Flash Flood, and Ice	All Municipalities	TBD	Staff Time

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
				Jam, Tornado, Earthquake, Hurricane, Tropical Storm, Nor'easter			
Goal 5: Attempt to reduce the current and future risk of flood damage in Venango County.							
5.1.1	Municipal offices to review statewide Uniform Construction Code to ensure enforcement thereof.	Venango County, Cornplanter Township, Cranberry Township, Emlenton Borough, City of Franklin, Frenchcreek	Local Plans and Regulations	Flood, Tornado, Earthquake, Hurricane, Tropical Storm, Nor'easter	Venango County, Cornplanter Township, Cranberry Township, Emlenton Borough, City of Franklin, Frenchcreek	Ongoing	Staff Time
5.2.1	Work with municipal leaders to identify roadways with frequent flooding. Share information with PennDOT and work cooperatively to develop strategies to mitigate the identified problems.	City of Franklin, Oil City	Structure and Infrastructure	Flood; Hurricane, Tropical Storm, Nor'easter	City of Franklin, Oil City	Ongoing	Municipalities
5.2.2	Identify and mitigate areas of frequent flooding	Cornplanter Township	Structure and Infrastructure	Flooding, Hurricane, Tropical Storm, Nor'easter	Cornplanter Township	Ongoing	HGMP

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
5.2.3	Identify and mitigate frequently flooded roads.	Canal Township	Structure and Infrastructur e	Flooding, Hurricane, Tropical Storm, Nor'easter	Canal Township	2-5 yrs.	Municipal; HMGP; Non- disaster Funds
5.2.4	Implement redundancy in critical infrastructure, should a disaster occur that it does not affect all residents and/or businesses (water, sewer, transportation (traffic management), electric, natural gas pipelines, communications (Public and Emergency Services).	City of Franklin	Local Plans and Regulations; Structure and Infrastructur e	All Hazards	City of Franklin	5 yrs; ongoing	EMPG; Non- disaster Funds
5.2.5	Replace damaged culverts, add catch basins, and install cross pipes to relieve stormwater.	Clinton Township	Structure and Infrastructur e	Flood, Flash Flood, Ice Jam; Hurricane, Tropical Storm, Nor'easter	Clinton Township and Venango County Conservation District	5 Years	Dirt/Gravel Road Grants
5.2.6	Mitigate washout from flooding due to heavy rainfall by fixing hillside.	Rockland Township, Rouseville Borough	Structure and Infrastructur e	Flooding	Municipal Employees, Contracted Engineers	Ongoing	Municipal General Fund
5.3.1	Engage a third party entity to perform floodplain enforcement.	Cherrytree Township	Structure and Infrastructur e; Local Plans and Regulations	Flooding	Cherrytree Township	Ongoing	FEMA, PEMA

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
5.3.2	Authorize permits for discharges of stormwater associated with construction activities in compliance with the provisions of the clean water act.	President Township	Structure and Infrastructure; Local Plans and Regulations	Flooding, Environmental Hazards Release	Department of Environmental Protection	2024-2029	Department of Environmental Protection
5.3.3	Ensure all properties located in flood zones are in compliance with code and meet all properties according to FEMA.	Sugarcreek Borough	Structure and Infrastructure	Flooding	Borough of Sugarcreek Borough Zoning and Administrative Departments	Through 2025	N/A
5.4.1	Create a substantial improvement/substantial damage (SI/SD) plan or procedure.	All Municipalities	Structure and Infrastructure; Local Plans and Regulations	Flooding	Venango County Regional Planning Commission	Ongoing	Municipal Funding
Goal 6: Protect existing natural resources and open space, including parks and wetlands, within the floodplain and watershed to improve their flood control function.							
6.1.1	Work with the DEP, conservation agencies, park and recreation organizations, wildlife groups, and other appropriate agencies to collect information of the number and location of natural resource areas throughout the County.	Venango County Conservation District; All Municipalities	Natural Systems Protection	All Hazards	Venango County Conservation District	Ongoing	Staff Time
6.1.2	Incorporate risk assessment and hazard mitigation principles into comprehensive planning efforts.	Venango County	Local Planning and Regulations	All Hazards	Venango Conservation District, Venango County	TBD	Staff Time
Goal 7: Reduce the risks posed by the potential failure of HHPDs within the County.							

Table 6.4-1: 2025 Venango County Mitigation Action Plan

#	Action Description	COMMUNITY/ ORGANIZATION	CATEGORY	HAZARD	LEAD AGENCY/ DEPARTMENT	IMPLEMENTATION SCHEDULE	FUNDING SOURCE AND NOTES
7.1.1	Review all Emergency Action Plans for dams.	Venango County; All Municipalities	Local Planning and Regulations	Dam Failure	All Municipalities	2025	Staff Time
7.2.1	Work with municipalities to collect GIS data and records on all dams, including HHPDs.	Venango County; All Municipalities	Local Planning and Regulations; Education and Awareness	Dam Failure	All Municipalities	2030	Staff Time
7.3.1	Coordinate land use development with PADEP Chapter 105 permitting to protect stream functionality.	Venango County; All Municipalities	Local Planning and Regulations	Dam Failure	All Municipalities	Ongoing	Staff Time
7.3.2	Strengthen floodplain land use ordinances.	Venango County; All Municipalities	Local Planning and Regulations	Dam Failure	All Municipalities	Ongoing	Staff Time
7.3.3	Maintain and enhance dam preventative maintenance programs.	Venango County; All Municipalities	Local Planning and Regulations; Education and Awareness	Dam Failure	All Municipalities	Ongoing	Staff Time

Evaluating mitigation actions involves judging each action against certain criteria to determine its feasibility and potential impact. Actions were evaluated and prioritized by applying the Multi-Objective Mitigation Action Prioritization criteria. For each action, scores were assigned to each criterion using the following weighted, multi-objective mitigation action prioritization criteria.

Effectiveness (weight: 20% of score): The extent to which an action reduces the vulnerability of people and property.

Efficiency (weight: 30% of score): The extent to which time, effort, and cost is well used as a means of reducing vulnerability.

Multi-Hazard Mitigation (weight: 20% of score): The action reduces vulnerability for more than one hazard.

Addresses High Risk Hazard (weight: 15% of score): The action reduces vulnerability for people and property from a hazard(s) identified as high risk.

Addresses Critical Communications/Critical Infrastructure (weight: 15% of score): The action pertains to the maintenance of critical functions and structures such as transportation, supply chain management, data circuits, etc.

Scores of 1, 2, or 3 were assigned for each multi-objective mitigation action prioritization criterion where 1 is a low score and 3 is a high score. The Efficiency criterion, which considers the cost and effort of each action versus its overall vulnerability reduction benefit, is the highest weighted criterion as part of the total prioritization score. Action were prioritized using the cumulative score assigned to each. Each mitigation action was then given a priority ranking (Low, Medium, and High) based on the following:

Low Priority: 1.0 – 1.8

Medium Priority: 1.9 – 2.4

High Priority: 2.5 – 3.0

Table 6.4-2 presents the cumulative results of the prioritization of mitigation actions. Of the 42 total actions, 18 are ranked High Priority and the rest are ranked Medium Priority.

Table 6.4-2: 2025 Venango County Mitigation Action Plan Prioritization							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 1.0-1.8		Medium = 1.9-2.4		High = 2.5-3.0	
#	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
Goal 1: Increase public awareness regarding natural and manmade hazard risks, preparedness and mitigation							
1.1.1	Public Speaking series to include topics such as types of natural disasters and risks, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple types of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups, etc. Coordination with state agencies such as DCNR-BOF as needed.	2	3	3	3	1	2.5
1.2.1	Property owners will be provided with hazard mitigation resources via an annual municipal newsletter.	2	3	3	3	1	2.5
1.3.1	Provide CERT classes to interested citizens in Venango County to assist first responders at specified emergencies throughout the county. Project Impact Coordinator to take the CERT Train the Trainer Course to assist with training in the County. Additional trainers need to attend future Train the Trainer courses.	3	2	3	3	1	2.4
1.3.2	To meet with groups of potential volunteers to attempt to increase the number of trained responders for: All County Fire Departments, doctors and nurses who may become first	3	2	3	3	1	2.4

Table 6.4-2: 2025 Venango County Mitigation Action Plan Prioritization							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 1.0-1.8		Medium = 1.9-2.4		High = 2.5-3.0	
#	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
	responders in a bio-terrorism event, EMS personnel, etc. Will benefit all areas of Venango County.						
1.3.3	When funds become available for mitigation projects, the Borough will hold a series of public meetings with the owners of repetitive loss properties in high-risk areas. These meetings will also be used to identify high-risk properties in the unincorporated areas of the County and to determine potential participation in future acquisition and relocation projects.	3	2	1	2	2	2
1.4.1	Increase public awareness and more effectively publicize wildfire danger times and threats.	2	3	1	2	2	2.1
1.4.2	Develop awareness and educate the public on wildland/urban interface. Develop incentives for property owners to develop and maintain defensible space around their structures. Including encouraging the use of non-combustible materials & technology (FIREWISE) when building or renovating structures.	2	3	1	2	2	2.1
1.4.3	Incorporate hazard mitigation into school curriculum where possible.	1.5	1.5	3	3	1	1.95
1.4.4	Enhance hazard awareness of the private sector, particularly lenders, insurance agents, and realtors.	2	3	3	3	1	2.5
1.4.5	Encourage municipal offices to review regulations pertaining to their jurisdiction to make sure that adequate zoning regulations are in place to reduce future development in high hazard areas in their jurisdiction. Planning department to review Subdivision and Land Development Ordinance.	2	3	3	3	1	2.5

Table 6.4-2: 2025 Venango County Mitigation Action Plan Prioritization							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 1.0-1.8		Medium = 1.9-2.4		High = 2.5-3.0	
#	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
Goal 2: Ensure that adequate shelter is available to current and future populations.							
2.1.1	To work with the American Red Cross towards upgrading all shelter resources and ensuring that any new shelters are sited outside of hazard prone areas	3	2	3	3	1	2.4
2.2.1	West Central PA Red Cross and Venango County EMA to hold an annual work session to share information about local shelters. Information to include the site of each shelter, how many people it can house and feed, if it has back-up power available on site, completed site survey forms and types of resources that they have or that they need. This will benefit all areas of Venango County in the event of the need to open shelters.	3	2	3	3	1	2.4
2.3.1	Develop a shelter in place plan.	2	3	3	3	1	2.5
Goal 3: Identify all repetitive loss structures throughout the County.							
3.1.1	To work with FEMA and PEMA to get updated repetitive loss information on properties in the County and in the municipalities in order to plan future mitigation activities.	2	3	1	2	2	2.1
3.1.2	Continue to produce and submit Mitigation Projects for high-risk structures/areas (especially post-disaster).	3	2	3	2	2	2.4
3.1.3	When funds become available for mitigation projects, the county plans to hold meetings to identify high-risk properties in the county and to determine potential participation in future acquisition and relocation projects.	3	2	3	2	2	2.4

Table 6.4-2: 2025 Venango County Mitigation Action Plan Prioritization							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 1.0-1.8		Medium = 1.9-2.4		High = 2.5-3.0	
#	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
3.1.4	Mitigate repetitive loss properties associated with flood sources: Chubbs, Davis, and Smith Runs.	3	2	1	2	2	2
Goal 4: Develop better hazard data for Venango County and the municipalities.							
4.1.1	Planning department and applicable municipal offices to review their comprehensive plans to ensure that designated growth areas are not in high hazard areas identified in this plan.	3	3	3	2	3	2.85
4.1.2	Encourage municipal offices to review regulations pertaining to their jurisdiction to make sure that adequate zoning regulations are in place to reduce future development in high hazard areas in their jurisdiction. Planning department to review Subdivision and Land Development Ordinance.	3	3	3	2	3	2.85
4.1.3	Review and update all annexes the City of Franklin's Emergency Operations Plan.	3	3	3	3	3	3
4.2.1	Survey county and determine those areas at highest risk for wildfires. Develop pre-planning for these areas should a wildfire occur.	2	2	1	2	2	1.8
4.2.2	Inventory and equip critical facilities with backup power generators.	3	3	3	3	3	3.0
4.2.3	Assess wind resistance of critical facilities and shelters.	3	3	3	3	3	3.0
4.2.4	Enhance impact analysis for high-risk hazards such as winter storm and tornado/windstorms.	2	3	3	3	1	2.5
Goal 5: Attempt to reduce the current and future risk of flood damage in Venango County.							

Table 6.4-2: 2025 Venango County Mitigation Action Plan Prioritization							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 1.0-1.8		Medium = 1.9-2.4		High = 2.5-3.0	
#	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
5.1.1	Municipal offices to review statewide Uniform Construction Code to ensure enforcement thereof.	2	3	1	2	1	1.95
5.2.1	Work with municipal leaders to identify roadways with frequent flooding. Share information with PennDOT and work cooperatively to develop strategies to mitigate the identified problems.	3	3	1	2	3	2.45
5.2.2	Identify and mitigate areas of frequent flooding.	3	3	1	2	2	2.3
5.2.3	Identify and mitigate frequently flooded roads.	3	3	1	2	3	2.45
5.2.4	Implement redundancy in critical infrastructure, should a disaster occur that it does not affect all residents and/or businesses (water, sewer, transportation (traffic management), electric, natural gas pipelines, communications (Public and Emergency Services).	3	2	3	3	3	2.7
5.2.5	Replace damaged culverts, add catch basins, and install cross pipes to relieve stormwater.	3	2	1	2	3	2.15
5.2.6	Mitigate washout from flooding due to heavy rainfall by fixing hillside.	3	2	1	2	1	1.85
5.3.1	Engage a third-party entity to perform floodplain enforcement.	3	3	1	2	2	2.3
5.3.2	Authorize permits for discharges of stormwater associated with construction activities in compliance with the provisions of the clean water act.	3	3	1	2	3	2.45
5.3.3	Ensure all properties located in flood zones are in compliance with code and meet all properties according to FEMA.	3	3	1	2	2	2.3
5.4.1	Replace bridge and secure sections of the roadway abutting the stream to allow emergency access and evacuation.	3	2	1	2	3	2.15

Table 6.4-2: 2025 Venango County Mitigation Action Plan Prioritization							
MITIGATION ACTIONS		MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION CRITERIA					
		Low = 1.0-1.8		Medium = 1.9-2.4		High = 2.5-3.0	
#	NAME	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Communications/ Critical Infrastructure	Total Score
Goal 6: Protect existing natural resources and open space, including parks and wetlands, within the floodplain and watershed to improve their flood control function.							
6.1.1	Work with the DEP, conservation agencies, park and recreation organizations, wildlife groups, and other appropriate agencies to collect information of the number and location of natural resource areas throughout the County.	2	3	2	1	1	2
6.1.2	Incorporate risk assessment and hazard mitigation principles into comprehensive planning efforts.	3	3	3	3	3	3.0
Goal 7: Reduce the risks posed by the potential failure of HHPDs within the County.							
7.1.1	Review all Emergency Action Plans for dams.	3	3	2	2	3	2.65
7.2.1	Work with municipalities to collect GIS data and records on all dams, including HHPDs.	3	3	2	2	3	2.65
7.3.1	Coordinate land use development with PADEP Chapter 105 permitting to protect stream functionality.	3	3	3	3	3	3.0
7.3.2	Strengthen floodplain land use ordinances.	3	3	3	3	3	3.0
7.3.3	Maintain and enhance dam preventative maintenance programs.	3	3	3	3	3	3.0

7. PLAN MAINTENANCE

7.1 UPDATE PROCESS SUMMARY

Once this plan has received approval from PEMA and FEMA, the plan will be adopted by the Venango County Board of Commissioners and all participating jurisdictions. This HMP Update is intended to be a ‘living document.’ Plan adoption is not considered the final step in the planning process, but rather as a first step to ‘realization.’ The plan monitoring and maintenance schedule is a cycle of events that involve periodic review, adjustments, and improvement. Plan monitoring also provides an opportunity to recognize other planning initiatives within the county that may benefit from the incorporation of risk and/or mitigation objectives detailed in this HMP. This section establishes a method to monitor how the plan will be evaluated and maintained.

7.2 MONITORING, EVALUATING, AND UPDATING THE PLAN

Monitoring, evaluating, and updating this plan is critical to maintaining its value and success in Venango County’s hazard mitigation efforts. Ensuring effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. This section explains who will be responsible for maintenance activities and what those responsibilities entail. It also provides a methodology and schedule of maintenance activities including a description of how the public will be involved on a continued basis. The HMSC elected to keep the methodology and schedule similar to what is outlined in the 2020 HMP and will continue to put more emphasis on integrating the mitigation goals, objectives, and actions identified in the Mitigation Strategy into the other ongoing planning efforts to ensure implementation and tracking of actions throughout the five-year plan maintenance process.

The HMSC established for the 2025 HMP is designated to lead plan maintenance processes of monitoring, evaluation, and updating with support and representation from all participating municipalities. The HMSC will coordinate maintenance efforts, but the input needed for effective periodic evaluations will come from community representatives, local emergency management coordinators and planners, the general public, and other stakeholders, including non-profit organizations and state agencies. The HMSC will oversee the progress made on the implementation of action items identified in the 2025 HMP and modify actions, as needed, to reflect changing conditions. The HMSC will meet annually to discuss specific coordination efforts that may be needed with other stakeholders. The Venango County Regional Planning Commission and/or the Venango County Department of Public Safety will guide the HMSC during the annual reviews.

Venango County Department of Public Safety and the Venango County Regional Planning Commission will lead the effort to integrate mitigation goals, objectives, and actions into the county and regional comprehensive planning efforts. Specifically, they will ensure risk assessments and applicable mitigation actions are included in the development of comprehensive planning documents. These entities will report to the HMSC the progress of these actions and will identify if there are changes that need to be made to the risk assessment or the mitigation strategy based on information developed during the comprehensive planning process.

Each municipality will designate a community representative to monitor mitigation activities and hazard events within their respective communities. The local emergency management coordinator would be suitable for this role. This individual will be asked to work with the HMSC to provide updates on applicable mitigation actions and feedback on changing hazard vulnerabilities within their community.

In addition, the municipal monitor will be responsible for reviewing the planning and land use regulatory element of the municipality's capability assessment to identify potential opportunities for continued incorporation of the HMP into local planning mechanisms and will also identify locally generated plans, information, reports, etc. that may be capable of being incorporated into the update of the 2025 HMP.

The HMSC will oversee the progress made on the implementation of action items at least annually, but also as deemed necessary based on the occurrence of a disaster or another occasion that necessitates the review of the HMP. Evaluation of the 2025 HMP will not only include an investigation of whether mitigation actions were completed, but also an assessment of how effective those actions were in mitigating losses. A review of the qualitative and quantitative benefits (or avoided losses) of mitigation activities will support this assessment. Results of the evaluation will then be compared to the goals and objectives established in the plan and decisions will be made regarding whether actions should be discontinued or modified in any way in light of new developments in the community. Progress will be documented by the HMSC for use in the next HMP Update.

Upon each HMP evaluation, the HMSC will consider whether applications should be submitted for existing mitigation grant programs. A decision to apply for funding will be based on appropriate eligibility and financial need requirements. All state and federal mitigation funding provided to the County or local municipalities will be reported in subsequent plan updates.

The 2025 HMP will be updated by the FEMA approved five-year anniversary date, as required by the Disaster Mitigation Act of 2000, or following a disaster event. Future plan updates will account for any new hazard vulnerabilities, special circumstances, or new information that becomes available. During the five-year review process, the

following questions will be considered as criteria for assessing the effectiveness of the Venango County HMP:

- Has the nature or magnitude of hazards affecting the county changed?
- Are there new hazards that have the potential to impact the county?
- Is there updated, or more quantitative, risk assessment data available related to the identified hazards in the plan? Can this data be integrated into the analysis to better assess the vulnerability, and depict the risk, of communities to the hazards?
- Do the identified goals and actions address current and expected conditions?
- Have mitigation actions been implemented or completed?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Are current resources adequate to implement the plan?
- Should additional local resources be committed to address identified hazards?
- Are there current or upcoming planning mechanisms or initiatives in which the mitigation strategy should be considered for integration?

Issues that arise during monitoring and evaluation which require changes to the risk assessment, mitigation strategy, and other components of the plan will be incorporated during future updates.

7.3 CONTINUED PUBLIC INVOLVEMENT

As was done during development of this 2025 HMP, the HMSC plans to involve the public during annual review periods by providing an opportunity to review and submit feedback. The public will have access to the current HMP through their local municipal office or on the Venango County government website. Some rural areas in the County do not have internet access and require communication through physical means. Information on upcoming events related to the HMP or solicitation for comments will be announced via newsletters, newspapers, mailings, and the county website. The public is encouraged to submit comments on the HMP at any time. The HMSC will incorporate all relevant comments during the next update of the hazard mitigation plan.

Comprehensive Plans, Capital Improvements Programs, Building Codes, Municipal Floodplain Management Regulations, Emergency Operations Plans, and Zoning Ordinances are identified for incorporation of hazard mitigation actions once the 2025 HMP is adopted. Each of these mechanisms will continue to be used to meet the intent of this Plan, as appropriate. Likewise, as these planning mechanisms are updated, they will be considered for incorporation into the HMP during the annual review process and/or the five-year cycle update.

The County and participating jurisdictions may propose additional mitigation actions for inclusion throughout the five-year cycle but must submit new mitigation actions through the Venango County Department of Public Safety, which will request an HMP amendment by contacting the PEMA State Hazard Mitigation Planner. FEMA must officially approve all additions and will amend the HMP by issuing an HMP Amendment Approval letter.

8. PLAN ADOPTION

The Plan was submitted to the Pennsylvania State Hazard Mitigation Officer and forwarded to FEMA for final review and approval-pending-adoption on April 22, 2025. FEMA granted approval-pending-adoption on July 15, 2025. Full approval from FEMA was received after each jurisdiction adopted the plan.

This section of the plan includes copies of the local adoption resolutions passed by Venango County and its municipal governments. Adoption resolution templates are provided to assist the County and municipal governments with recommended language for future adoption of the HMP. The completed Local Mitigation Plan Review Crosswalk is included in [Appendix B](#).

Venango County 2025 Hazard Mitigation Plan Update

County Adoption Resolution

Resolution No. _____

Venango County, Pennsylvania

WHEREAS, the municipalities of Venango County, Pennsylvania are most vulnerable to natural and human-caused hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, Venango County acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Venango County 2025 Hazard Mitigation Plan Update has been developed by the Venango County Department of Public Safety and the Venango County Regional Planning Commission in cooperation with other county departments, local municipal officials, institutional stakeholders, and the citizens of Venango County, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Venango County 2025 Hazard Mitigation Plan Update, and

WHEREAS, the Venango County 2025 Hazard Mitigation Plan Update recommends mitigation activities that will reduce losses to life and property affected by both natural and human-caused hazards that face the County and its municipal governments,

NOW THEREFORE BE IT RESOLVED by the governing body for the Venango of Venango that:

- The Venango County 2025 Hazard Mitigation Plan Update is hereby adopted as the official Hazard Mitigation Plan of the County, and
- The respective officials and agencies identified in the implementation strategy of the Venango County 2025 Hazard Mitigation Plan Update are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this _____ day of _____, 202_

ATTEST:

VENANGO COUNTY COMMISSIONERS

By _____

By _____

By _____

Venango County 2025 Hazard Mitigation Plan Update

Municipal Adoption Resolution

Resolution No. _____

<Borough/Township of Municipality Name>, Venango County, Pennsylvania

WHEREAS, the <Borough/Township of Municipality Name>, Venango County, Pennsylvania is most vulnerable to natural and human-caused hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, the <Borough/Township of Municipality Name> acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Venango County 2025 Hazard Mitigation Plan Update has been developed by the Venango County Office Department of Public Safety and the Venango County Regional Planning Commission in cooperation with other county departments, local municipal officials, institutional stakeholders, and the citizens of Venango County, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Venango County 2025 Hazard Mitigation Plan Update, and

WHEREAS, the Venango County 2025 Hazard Mitigation Plan Update recommends mitigation activities that will reduce losses to life and property affected by both natural and human-caused hazards that face the County and its municipal governments,

NOW THEREFORE BE IT RESOLVED by the governing body for the <Borough/Township of Municipality Name>:

- The Venango County 2025 Hazard Mitigation Plan Update is hereby adopted as the official Hazard Mitigation Plan of the <Borough/Township>, and
- The respective officials and agencies identified in the implementation strategy of the Venango County 2025 Hazard Mitigation Plan Update are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this _____ day of _____, 202_

ATTEST: _____ **<BOROUGH/TOWNSHIP OF MUNICIPALITY NAME>**

By _____
By _____

9. APPENDICIES

APPENDIX A BIBLIOGRAPHY

APPENDIX B LOCAL MITIGATION PLAN REVIEW CROSSWALK

APPENDIX C MEETING AND OTHER PARTICIPATION
DOCUMENTATION

APPENDIX D LOCAL AND REGIONAL FLOOD VULNERABILITY
MAPS

APPENDIX E CRITICAL FACILITIES AND COMMUNITY LIFELINES

APPENDIX F HAZUS METHODOLOGY AND RESULTS REPORT

APPENDIX G DAM FAILURE HAZARD PROFILE (SECTION 4.3.12)

APPENDIX H OUTREACH AND ENGAGEMENT PLAN