Oswego County, New York

Multi-Jurisdictional Hazard Mitigation Plan

Updated October 2019

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This plan was compiled by the Oswego County Emergency Management Office and Barton & Loguidice, D.P.C. All jurisdictions within Oswego County were invited to participate in this planning process. A special thanks to the representatives from each participating jurisdiction for their time and effort to this project.

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1.0 Introduction

1.1 Background

What is a Hazard?

A hazard is defined by the Federal Emergency Management Agency (FEMA) as an event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural losses, damage to the environment, interruption of business, or other types of harm or loss (FEMA, 1997, xxi). A hazard can be natural, technological or human-caused.

What is Hazard Mitigation?

Hazard mitigation is broadly defined by FEMA IS 393.b, Introduction to Hazard Mitigation, as a method for reducing or alleviating property loss, reducing damage to the environment, and reducing the number and severity of injuries that occur from hazard events through long and short-term strategies. Responsibility for implementing mitigation measures runs community wide from individuals to industries, private business and all levels of government.

Hazard Mitigation and the Other Phases of Emergency Management

Hazard mitigation is often considered just one of four phases of emergency management. The other phases include preparedness, response and recovery. Each of these phases relate to and rely upon each other, as illustrated below.

The Phases of Emergency Management

The overarching goal of all of these emergency management phases is the prevention or minimizing of loss of life and property in disaster situations.

FEMA and Hazard Mitigation

The Federal Emergency Management Agency (FEMA) provides assistance through the Robert T. Stafford Disaster Relief and Emergency Assistance Act to local governments that are recovering from a hazard event. The Federal Disaster Mitigation Act of 2000 (DMA 2000) recognized the importance and cost-effectiveness of mitigation in specifying that local governments must have a FEMA approved natural hazard mitigation plan to be eligible for mitigation project funding.

DMA 2000 encourages and rewards local and state pre-disaster planning, promotes conservation and sustainability, and seeks to integrate state and local planning with an overall goal of strengthening statewide hazard mitigation planning. As of November 1st, 2004, all local governments were required to have a FEMA approved hazard mitigation plan to receive funding through the Hazard Mitigation Grant Program (HMGP) for specified mitigation projects.

To meet the federal requirements of the Disaster Mitigation Act of 2000, Oswego County completed a Multi-Jurisdictional Hazard Mitigation Plan (HMP) in 2012, which was approved by FEMA in 2013. The County was awarded a Pre-Disaster Hazard Mitigation Grant from FEMA in 2017 to update their 2012 HMP.

1.2 Purpose

This plan signifies Oswego County's approach to the development of a Multi-Jurisdictional Hazard Mitigation Plan in order to seek mitigation funding in the future to alleviate the potential effects of natural, human caused and technological disasters and hazards that may affect the County. Each participating jurisdiction, in addition to the County as a whole, has identified the hazards to which their community is most vulnerable. In addition, the mitigation plan also includes an assessment of the risks and vulnerabilities associated with each hazard and details mitigation strategies to moderate those vulnerabilities and decrease the risks. At a minimum, the identified mitigation measures were required to be technically feasible, cost-effective, and environmentally sound.

Within Oswego County, the Emergency Management Office (EMO) is the coordinating agency for all emergency management activities. This office is responsible for life safety, property, and environmental protection from all natural and technological hazards that may occur within Oswego County. The development of a County hazard mitigation plan provides the following benefits:

- Increased understanding of the natural hazards the County faces;
- Development of more sustainable and disaster-resistant communities;
- Partnerships that support planning and mitigation efforts;
- Reduced long-term impacts to structures and human health; and

- Eligibility for Federal funds for pre-disaster mitigation planning (DMA 2000).
- Comments or questions concerning this document should be addressed to the Oswego County Emergency Management Office at the Oswego County Branch Building, 200 North Second Street, Fulton, New York 13069. The telephone number for this office is (315) 591-9150.

For additional information on Oswego County's mitigation planning process or the County's Emergency Management Office, please visit their website at: http://oswegocounty.com/emo.

1.3 Planning Participants

There are 22 towns, 9 villages, and 2 cities located within Oswego County. All jurisdictions were invited to participate in this plan update. One jurisdiction, the Town of Minetto, did not meet all participation criteria for the plan update. To EMO's knowledge, the Town of Minetto does not intend to develop a single jurisdiction hazard mitigation plan. Participation criteria were established by the Executive Committee early on in plan progression. Table 1.1 (Appendix A) outlines the criteria that had to be met in order for a jurisdiction to be included as a participating member of the County's hazard mitigation plan. Jurisdiction representatives are listed in Table 1.2 (Appendix A). Jurisdictional annexes are provided in Appendix B.

Figure 1.1 shows the boundaries of all jurisdictions within Oswego County. The County was geographically split into three working groups in order to assemble areas that experienced similar hazard concerns and to allow for easier jurisdiction participation. The hazard mitigation planning working groups are shown in Figure 1.2. The Northern Working Group is comprised of the Towns of Albion, Boylston, Orwell, Richland, Redfield, Williamstown, and Sandy Creek, and the Villages of Sandy Creek, Pulaski, and Lacona. The Central Working Group is comprised of the Towns of Hastings, Palermo, Parish, Mexico, Constantia, Amboy, New Haven, and West Monroe, and the Villages of Cleveland, Mexico, Parish, and Central Square. The Southern Working Group is comprised of the Towns of Granby, Hannibal, Volney, Schroeppel, Scriba, and Oswego, the Villages of Hannibal and Phoenix, and the Cities of Fulton and Oswego.

Meetings were conducted for each working group and for individual jurisdictions. The Southern Working Group met at the Oswego Fire Department, 35 E. Cayuga St., Oswego and the Emergency Response Training Center/County Fire Coordinator's Office, 720 E. Seneca St. in Oswego. The Central Working Group predominantly met at the Amboy Town Hall, 822 NY-69, Williamstown, NY 13493; and the Northern Working Group regularly met at the Sandy Creek Town Hall, 1992 Harwood Dr., Sandy Creek. Numerous meetings with individual jurisdictions were also conducted with Terry Bennett, Emergency Services Program Coordinator, of Oswego County EMO, and/or a member of the consultant team. Detailed information regarding each working group's meetings, participants, and outcomes is provided in Appendix C, Meeting Summary.

1.4 Hazard Mitigation Planning Process

All participating jurisdictions met the following criteria in order to be considered plan participants and support the plan update process:

- Updated assets, critical facility, and emergency shelter information;
- Assessed and ranked hazards to determine those that have the greatest possibility of impacting the jurisdiction;
- Estimated potential impact areas and damages that could occur as a result of selected hazards;
- Developed pre-disaster mitigation actions for selected hazards;
- Completed a cost-benefit analysis of proposed mitigation actions;
- Reviewed all information presented in their jurisdictional annex; and
- Reviewed the plan maintenance procedures associated with this Plan.

Two categories of hazards (Natural and Technological or Human Caused) were analyzed during the risk assessment process. This plan emphasizes natural hazards, with severe storms the primary hazard of concern. The County and many jurisdictions also chose to incorporate technological hazards into the Plan update for future planning purposes. It is understood that mitigation projects related to technological or human-caused hazards are not eligible for Pre-Disaster Mitigation grant funds through FEMA. All mitigation actions proposed by the County and individual jurisdictions were developed specifically to mitigate natural hazards.

2.0 Oswego County Profile

2.1 Geographic Location

Oswego County is located in northwestern New York State, just north of Syracuse and not far south of Watertown. The eastern shore of Lake Ontario borders the County to the west and the north shore of Oneida Lake borders the southeastern portion of the County to the south. The eastern part of the County includes part of the Tug Hill Plateau, the northeast corner of which registers as the highest point in Oswego County at 1550-feet above mean sea level (amsl). Figure 2.1 illustrates the multi-county area included as part of the Tug Hill Region, including the eastern portion of Oswego County. This area includes the Towns of Boylston, Orwell, Redfield, Albion, Williamstown, Parish, Amboy, Hastings, West Monroe, and Constantia, and the Villages of Parish, Cleveland, and Central Square.

Oswego County has a total area of 1,312 square miles, of which, 952 square miles are land and 360 square miles are water (U.S. Census Bureau, 2016). Figure 2.2 illustrates the topographic relief of Oswego County and the locations of major water bodies within and adjacent to the County limits.

For a detailed historical overview of Oswego County, please refer to the County's original 2012 HMP, available online at: http://www.oswegocounty.com/emo.

2.2 Climate Change in Oswego County

Oswego County is continuing to plan for impacts of climate change. Oswego County has committed to become a Climate-Smart Community by formally adopting a resolution including the ten elements of the Climate Smart Community pledge. The pledge focuses on shifting toward clean, renewable energy sources, implementing climate-smart land use, making communities more resilient to climate change, among other climate change actions. Four other jurisdictions in Oswego County are also Climate-Smart Communities: The Town of Richland, Village of Pulaski, Town of Minetto, and City of Oswego. The Town of Richland and Village of Pulaski developed a joint Climate Action Plan in 2016.

2.3 Land Use

Land use within Oswego County is primarily residential and rural. Areas of disturbance are attributed to residential areas and those associated with active agricultural uses, primarily row cropping and hay production. Numerous freshwater wetlands are also located within Oswego County, attributed to the fact that the County is located along the eastern shore of Lake Ontario and that much of the County is therefore associated with the Lake plain. The general land uses classified throughout the County are shown on Figure 2.3.

Areas of high residential density are located in the Villages and Cities within the County, with the highest densities in the City of Oswego and the City of Fulton. The Towns in the eastern portion of the county are very sparsely populated, and consist largely of undeveloped forested land. A housing unit is determined to be occupied if it is the normal place of residence of the person or persons living in it, including if said person(s) are temporarily absent. A vacant housing unit is classified as such if no one is living in it on a permanent basis, excluding temporary absence. Vacancy rates are calculated during U.S. Census years as a potential indictor of distressed regions. According to the Oswego County Comprehensive Plan (2007), in 1990, Oswego County had a vacancy rate of 12.6%. This rate increased by 23% to a rate of 15.5% in 2016 (U.S. Census, 2016).

Due to the high level of agricultural influence in Oswego County, active agricultural lands were mapped and are included in New York State agricultural district #11. This agricultural district was created in September 1982 and was certified in February 2016. Figure 2.4 shows the extent to which agricultural district #11 is mapped throughout Oswego County. Table 2.1, below, shows the percentage of land use categories in Oswego County for the years 1988, 1999, 2007, and 2017. Overall land use trends have not changed significantly between 2007 and 2017. However, the acreage of land used for agriculture has decreased by 2%, and forested, wild, or conservation land acreage has decreased by 1.4% since 2007.

Table 2.1 – Oswego County Land Use Trends, 1998-2017
(Oswego County Comprehensive Plan; Oswego County Real Property Tax Office, 2017)

Year	Agriculture	Residential	Vacant	Commercial	Recreational	Community Service	Industrial	Public Service	Forest, Wild, Conservation
1988	19.9%	33.9%	18.4%	1.5%	0.8%	1.1%	0.9%	3.5%	20.0%
1999	13.6%	36.7%	22.6%	1.9%	1.1%	1.1%	1.1%	2.7%	19.3%
2007	9.6%	40.5%	26.6%	1.8%	1.3%	1.1%	0.9%	2.0%	19.4%
2017	7.6%	40.9%	26.8%	1.6%	1.1%	1.2%	0.8%	1.8%	18.0%
% change since 2007	**-2.00%**	**0.40%**	**0.20%**	**-0.20%**	**-0.20%**	**0.10%**	**-0.10%**	**-0.20%**	**-1.40%**

The majority of jurisdictions within Oswego County have adopted comprehensive/land use plans and/or zoning regulations in order to enforce specific regulations for certain types of land use or structures. The types of land use regulations implemented by each jurisdiction within the County are outlined in Table 2.3 (Appendix A).

2.4 Economic Characteristics

The unemployment rate in Oswego County is approximately 6.4% as of November 2017, which has steadily decreased since its recent peak of 11% in 2012 (NYSDOL, 2018). The County's unemployment rate is higher than that of New York State, which is 4.4% as of November 2017. Table 2.4 provides an overview of economic characteristics for Oswego County compared to those of New York State.

Table 2.4 – Economic Characteristics of Oswego County, 2010 to 2016
(U.S. Census Bureau, 2016)

	2010	%	NYS	2012-2016	%	NYS
Labor Force	60,322	62.2%	9,808,150	57,780	59.2%	10,123,078
Travel Time to Work (mins)	24.1	-	31.3	24.2	-	32.6
Median Household Income ($)	45,333	-	55,603	49,571	-	60,741
Median Family Income ($)	56,364	-	67,405	60,689	-	74,036
Per Capita Income ($)	21,604	-	30,948	24,284	-	34,212
Families Below Poverty Line	-	10.4%	10.8%	-	12.9%	11.7%
Individuals Below Poverty Line	-	15.3%	14.2%	-	18.3%	15.5%

2.5 Climate

According to Oswego County's Comprehensive Plan, the climate of the County is that of the continental type, predominantly influenced by the gently rolling topography, the prevailing westerly winds, and the proximity of the County to Lake Ontario. Normal temperatures for Oswego County are very similar to those of the northeastern United States and Western Europe; however, the temperature can be significantly influenced by Lake Ontario. The County's monthly precipitation is well distributed throughout the year. The total rainfall can vary from an annual average of 36 inches in the southwest section of the County to 55 inches in the northeast section of the County, located within the Tug Hill Region. Seasonal snow averages for Oswego County range from less than 90 inches in the southwest section to more than 200 inches in the Tug Hill area (northeastern section). Oswego County is included in the Eastern Lake Ontario snow belt.

The Tug Hill Region is recognized as having a short growing season and as being one of the wettest and snowiest areas of New York State. Frost may be expected in Oswego County between early October and late May. The prevailing winds shift towards the north-west in winter and towards the south-west in the summer. Figures 2.5, 2.6, and 2.7 (Appendix A) show average January temperatures, average July temperatures, and average annual precipitation throughout New York State.

2.6 Transportation

In Oswego County, roadway and limited air transportation travel options are available. Interstate 81 travels north-south through the heart of Oswego County, entering the County in the Town of Hastings and leaving through the Town of Sandy Creek. Interstate Route 81 also passes through the following jurisdictions within Oswego County: Village of Central Square, Village of Parish, Town of Parish, Town of Mexico, Town of Richland, Village of Pulaski, and Village of Sandy Creek. This is the main access route to reach Oswego County from the north and south, and the main evacuation route to exit the County. U.S. Route 11 parallels Interstate Route 81 from the Town of Hastings to the Town of Sandy Creek, within Oswego County. This route is also a main access and exit point for Oswego County.

In addition to Interstate Route 81, U.S. Route 11, and numerous local roadways, Oswego County includes 14 NYS Routes (104, 104A, 104B, 3, 13, 176, 183, 264, 34, 48, 481, 49, 69, and 69A) and 9 major County Routes (16, 43, 176, 57, 28, 34, 4, 26, 3). Major roadways are depicted in Figure 2.8 (Appendix A).

The Oswego County Highway Dept. maintains 505 miles of County roads, 113 bridges, 4,000 culverts, 7,000 signs, and 35 miles of guide railing. The County Highway Dept. contracts with the NYSDOT to assist in snow removal along state owned roadways. The County Highway Dept. is responsible for snow removal on nearly 300 miles of state highways and 54 miles of County roads. The County contracts with Town Highway Departments to remove snow on the remaining 450 miles of County roads. The Oswego County Highway Department has three maintenance facilities located in the Towns of Scriba, Parish, and Richland.

The active portions of the rail system within Oswego County are used to transport freight only. The majority of these rail segments are owned and/or operated by CSX Transportation, Inc. The active CSX railroad tracks run between Onondaga County and the Town of Scriba, through the cities of Fulton and Oswego, and between Onondaga County and Jefferson County, paralleling the Interstate Route 81 corridor. Many of the east-west railroad segments have been abandoned and the tracks removed. Active railroads are shown in Figure 2.8 (Appendix A).

The air transportation within Oswego County is limited. The closest international airports are the Syracuse Hancock International Airport in the City of Syracuse, Onondaga County and the Watertown International Airport in the City of Watertown, Jefferson County. There are 10 airports located within Oswego County; 9 of which are privately owned (Table 2.5). It is noted that the Spring Brook Airport in the Town of Palermo, which was listed in the County's 2012 HMP, is no longer operating according to local jurisdiction representatives. Airport locations are shown in Figure 2.8 (Appendix A).

Table 2.5 – Airports in Oswego County
(Global Aviation Navigator, Inc.)

Name	Location	ICAO ID No.*	IATA ID No.*	Ownership	Runway(s)
Riveredge Airpark Airport	Town of Hastings	19NK	19NK	Private	1 – turf
Engineers Airport	Town of Constantia	NK82	NK82	Private	1 – turf
Kidder Field	Town of Sandy Creek	1NY2	1NY2	Private	1 – turf
Oswego County Heliport at Pulaski	Town of Richland	05NY	05NY	County-owned	None
Richland Airport	Town of Richland	1NY3	1NY3	Private	1 – turf
Caughdenoy Airport	Town of Hastings	1NY9	1NY9	Private	1 – turf
Oswego County Airport	Town of Volney	KFZY	FZY	County-owned	2 – asphalt
Mexico Airdrome	Town of Mexico	NY96	NY96	Private	1 – turf
Kingdom Field	Town of Scriba	5NK5	5NK5	Private	1 – turf

*IATA = International Air Transport Association
*ICAO = International Civil Aviation Organization

The Oswego County Airport is owned by Oswego County and was designated by the Federal Aviation Administration (FAA) years ago as a general aviation reliever to Hancock International Airport. The Airport serves local pilots and national and international companies with fueling and hangar facilities. The airport grounds currently host a flight school. The Airport includes two runways, 100 ft. by 4,000 ft. and 100 ft. by 5,200 ft., as well as all taxiways, hangars, and approximately 400 acres of land area.

Oswego County is home to one of the major shipping ports on Lake Ontario, the Port of Oswego. This port is located at the mouth of the Oswego River. The Port of Oswego has a depth of 27 feet and a width of 750 feet. Storage facilities at the Port consist of over 100,000 square feet of shed space, 400,000 square feet of open storage, and a 32,000 ton storage building, all adjacent to active CSX railroad tracks.

Various recreational trails and facilities are present in Oswego County, in both urban and rural settings. Many trails are multi-seasonal and multi-modal. Trail use continues to grow across all age categories as outdoor recreation activities become more aligned with personal physical goals. The Seaway Trail is the only state designated bicycle route in the County. This trail enters Oswego County from Jefferson County in the Town of Sandy Creek, along NYS Route 3 and exits the County along NYS Route 104 in the Town of Hannibal. The Seaway Trail maps indicate multiple points of interest along the trail within Oswego County, including the Selkirk Lighthouse, Grindstone Farms, Derby Hill Bird Observatory, Fort Ontario State Historic Site, Richardson Bates House Museum, and Ontario Orchards. There is also an extension to the Seaway Trail called the Salmon Hatchery Bicycle Loop. Multiple other bicycle trails operated and maintained by cycling groups and local businesses are also located throughout the County.

The southern part of Oswego County is within commuting distance to the City of Syracuse and the northern part of the County is within commuting distance to the City of Watertown. Table 2.6, below, indicates the places of work for Oswego County's residents.

Table 2.6 – Places of Work in Oswego County
(U.S. Census Bureau, American Community Survey, 2016)

Place of Work	Total	Males	Females
Works in State of Residence	99.3%	98.9%	99.7%
Works in County of Residence	61.6%	56.8%	66.9%
Works Outside County of Residence	37.7%	42.1%	32.8%
Works Outside State of Residence	0.7%	1.1%	0.3%

2.7 Population Trends

According to the 2016 American Community Survey, the population of Oswego County was 120,513. This reflects a decrease of 1,864 people when compared to the 2000 U.S. Census data for the County (122,377). Table 2.7 (Appendix A) shows population trends for Oswego County from 1990 to 2016. Table 2.8, below, summarizes demographics for Oswego County compared with the same statistics for New York State.

Table 2.8 – Oswego County Demographics
(U.S. Census Bureau, American Community Survey, 2016)

Statistic	Oswego County	New York State
Total Population	120,513	19,697,457
Female (%)	49.9%	51.5%
Male (%)	50.1%	48.5%
Median Age	39.5 years	38.2 years
Population Diversity		
White	94.5%	56.4%
Hispanic or Latino	2.4%	18.6%
Black/African American	0.8%	14.4%
Asian	0.7%	8.1%
American Indian or Alaskan Native	0.1%	0.2%
Two or More Races	1.5%	1.8%

2.8 Critical Community Facilities

The critical facilities within Oswego County were identified by representatives of each jurisdiction, as well as by County representatives. These results were combined into a single geographic information system (GIS) County-wide coverage. Critical facilities within each jurisdiction are shown on individual maps within each jurisdictional annex (Appendix B). County-owned Critical Facilities are depicted on Figure 2.9 (Appendix A).

2.8.1 Hospitals, Medical Facilities, and Special Needs Facilities

There is one hospital located within Oswego County; the Oswego Hospital in the City of Oswego. A second hospital, A.L. Lee Memorial Hospital, was located in the City of Fulton, but closed in early 2009 and is now an Urgent Care Center operated by Oswego Health (Oswego Hospital). The Oswego Hospital has multiple satellite facilities located throughout the County, including the City of Fulton. There are three nursing homes and multiple other urgent care, senior and mental health medical and housing facilities throughout the County.

2.8.2 Police Stations, Ambulance Facilities, and Fire Stations

Oswego County has 32 fire departments, 6 emergency medical service transport providers, and 11 police departments, including the County Sheriff's office, and 3 NYS Police stations. The Oswego County Sheriff's Office is located in the City of Oswego along NYS Route 481. This facility provides law enforcement County-wide and also operates a direct supervision correctional facility.

Table 2.9 (Appendix A) identifies all fire departments located within Oswego County, along with the number of stations for each department (if more than one), and the jurisdiction in which each department is located.

Only two of the fire departments located in Oswego County are non-volunteer, the City of Oswego and the City of Fulton departments. In addition to the municipal fire stations, Novelis, Attis, and the three nuclear energy plants within the County have their own private fire services (Novelis Fire Department, Attis Fire Brigade, James A. FitzPatrick Nuclear Power Plant Fire Brigade, Nine Mile Point Unit 1 Fire Brigade, and the Nine Mile Point Unit 2 Fire Brigade). A portion of the Town of Hastings is served by the Brewerton Volunteer Fire Department, located in Onondaga County.

2.8.3 Schools

There are 9 school districts located within Oswego County, which include a total of 39 public schools and 3 private schools. Cumulatively, these schools provide for approximately 19,069 students as of October 2017 (NYSED, 2017). The Oswego County Center for Instruction, Technology, and Innovation (CiTi-BOCES) provides educational services for a total of about 780 students both in the Town of Mexico and throughout the County at host districts. Additionally, the State University of New York (SUNY) at Oswego campus is located in the City and Town of Oswego and the City of Fulton houses a branch of the Cayuga Community College (CCC).

SUNY Oswego was established at its current location in 1913. This college is 1 of 13 universities in the SUNY system. The campus consists of 58 buildings with classroom,

laboratory, residential, and athletic facilities. Approximately 8,000 students enroll at SUNY Oswego each year.

The Fulton Campus of Cayuga Community College (CCC) was started in January 1994. Cayuga Community College has an annual enrollment of approximately 6,500, which represents students at both the Fulton and Auburn campuses. The Fulton campus consists of one building with multiple classrooms, labs, an event center, and more. In 2017-2018, 698 students were enrolled at the Fulton branch of CCC, and approximately 1,500 students were enrolled during the fall 2019 semester.

2.8.4 Nuclear Facilities

The Nine Mile Point Nuclear Power Facility is a two-unit nuclear reactor power plant located along Lake Ontario in the Town of Scriba. The FitzPatrick Nuclear Power Plant, also located on the Nine Mile Facility property, has one reactor. All three units are boiling water reactors. Both sites are owned by Exelon Generation. The first Nine Mile Point reactor began operations in 1969, followed by the James A. FitzPatrick plant in 1975 and the second Nine Mile Point reactor in 1987. Because the Nine Mile Point Nuclear Power Facility is located in the Town of Scriba, Oswego County has implemented a Radiological Emergency Preparedness Program to help assure the safety of County residents that reside near the power facility. In the event of an emergency at Nine Mile Point, 40 sirens are in place to audibly alert residents to tune into an Emergency Alert System (EAS) station via radio or television. These emergency measures are in place to support a 10-mile Emergency Planning Zone (EPZ) that is centered around the location of the Nine Mile Point facility. As a backup method to the siren system, a mass-dialing notification system called HyperReach has also been put in place to protect areas and citizens within the Emergency Planning Zone and Oswego County.

2.8.5 Utilities

Electricity: National Grid is the supplier of electricity within Oswego County. Power is also generated at the following facilities: Exelon Generation's Nine Mile Point Nuclear Station Units 1 and 2 and the FitzPatrick Nuclear Plant located in Town of Scriba, NRG Energy, Inc. located in the City of Oswego, Independence Station located in the Town of Scriba, the County's Energy Recovery Facility in Fulton, and multiple hydropower facilities on the Oswego and Salmon Rivers.

Oil and Gas: Natural gas service is provided by National Grid throughout Oswego County. The Dominion Transmission natural gas pipeline stretches from the Town of Schroeppel to the Oswego County boundary. A short spur of the Buckeye petroleum pipeline extends from the Brewerton terminal located on East River Road, across the Oneida River, and continues into Onondaga County just west of NYS Route 11. Four oil/gas storage and shipping facilities that supply oil and gas to the residents of Oswego County are Oneida Lake Petroleum in the Village

of Central Square, Buckeye Terminals in the Town of Brewerton (Onondaga County), Suburban Propane in the Village of Phoenix, and Glider Oil in Pulaski, Fulton, and the City of Oswego. Additional smaller propane facilities are also located within Oswego County, including Amerigas in the Town of Minetto and the E&V Energy Company in the City of Fulton.

Solid Waste: The Bristol Hill Landfill, located in the Town of Volney, is the only active landfill that serves the solid waste needs of Oswego County. There are five transfer stations in the County, located in the Towns of Volney, Hannibal, Hastings, Oswego, and Pulaski. The Oswego County Department of Solid Waste also runs an Energy Recovery Facility (ERF) in the Town of Volney. This facility, originally commissioned in 1985, converts municipal solid waste into usable energy.

Water/Wastewater: There are currently 12 wastewater treatment plants (WWTP) in Oswego County, located in the Cities of Fulton and Oswego (2 in the City of Oswego), Villages of Central Square, Cleveland, Mexico, Parish, Phoenix, and Pulaski, and Towns of Hastings, Minetto, and West Monroe. The Town of West Monroe is currently undergoing a sewer system improvement project which will convert the Town's WWTP to a pump station which will convey all sanitary waste to the Town of Hastings WWTP for treatment. The intake tunnel for a portion of the Onondaga County Water Authority (OCWA) water supply system is located in the City of Oswego, which draws water from Lake Ontario and transports it through Oswego County to other counties. OCWA also treats and distributes water to numerous areas and municipalities within Oswego County. Table 2.10 (Appendix A) lists jurisdictions that have public water systems in Oswego County. More populous areas of the County have established water districts which provide residents and businesses with drinking water and provide fire protection from water hydrants installed as part of the water system infrastructure.

2.8.6 *Historical and Cultural Resources*

Though the historical resources located within Oswego County are not pictured on the critical facility mapping, they represent the County's rich history and diverse character. The cultural, historical, and archaeological resources identified within Oswego County were determined through a query of the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) website. A total of 91 sites listed on the National Register of Historic Places are located within the County. Historical and cultural resources within the County, including site names, are listed in the County's original HMP (2012) which is available for reference on the County website.

2.9 Oswego County Emergency Management Office

The Oswego County Emergency Management Office (EMO) serves as the disaster services and emergency preparedness center for the County. The EMO office is located in the City of Fulton along NYS Route 481 in the Oswego County Branch Office Building. The Oswego County Emergency Management Office maintains and administers an integrated emergency management

program designed to help ensure life safety, property and environmental protection from all natural, human-caused, and technological hazards through preparedness, prevention/mitigation, response and recovery.

The office provides planning and training resources, response and warning coordination, and information distribution through communications to the public, local government officials, and public safety agencies to assist them in emergency management.

EMO coordinates plans for emergency response, including county-wide and local comprehensive emergency management and hazard-specific plans such as radiological, hazardous materials, or mass-casualty and mass fatality. The Director of Emergency Management is the point-of-contact for National Incident Management System (NIMS) compliance for local governments and emergency response agencies. The office facilitated the County's designation as a National Weather Service StormReady Community, which ensures comprehensive weather monitoring and information dissemination programs, and as a Weather-Ready Nation Ambassador, which recognizes NOAA partners who are improving the nation's readiness against extreme weather, water, and climate events.

The Emergency Management Office manages the Emergency Medical Services (EMS) course sponsorship program through the New York State Department of Health/Emergency Medical Services Bureau.

In addition, during disaster response, the Emergency Management Office operates and maintains the County Emergency Operations Center (EOC), which coordinates and allocates resources, planning, public warning and information, and recovery with agencies involved in emergency response.

In 2020 the Emergency Management Office plans to establish a new Local Human Needs Committee.

2.9.1 Oswego County Emergency Communicators

The Oswego County Emergency Communicators/RACES (Radio Amateur Civil Emergency Service) is a manpower and equipment communications resource that provides professional skills to the Office of Emergency Management and the government of Oswego County. These skills include administrative and logistical communications to the emergency service agencies within the County and to other jurisdictions including the State Office of the Emergency Management, when needed. Each RACES communicator is licensed by the Federal Communications Commission (FCC). The organization is administered under the direction of the Oswego County Emergency Management Director.

The Oswego County Emergency Communicators support and are trained severe weather spotters in the National Weather Service's Skywarn™ program. Select communicators participate as sitting members of the Local Emergency Planning Committee as part of their participation in Emergency Preparedness for Oswego County.

Additionally, most smartphones (iPhone, Android, etc.) and wireless providers participate in the Wireless Emergency Alerts system (WEA). This service is provided at no cost to the consumer, nor does the consumer need to sign up to receive alerts. Wireless providers who do not participate in WEA, are required by the FCC to notify all customers that they do not participate. WEA is set up to inform the public of any public safety emergencies (severe weather, terrorist threat or attack, or other occurrence which involves an imminent threat(s) to life safety across the country. This means if an alert is sent to an area within Oswego County, someone visiting from outside the local area would receive the alert while in Oswego County.

3.0 Planning Process

3.1 Resources, Planning Mechanisms, and Capabilities

This HMP update was developed in accordance with the guidelines presented in the Local Mitigation Planning Handbook (FEMA, 2013) and the current New York State Hazard Mitigation Planning Standards Guide (NYS DHSES, 2017). In addition to these state and federal resources, other documents reviewed during the Oswego County HMP update process included the original Oswego County Hazard Mitigation Plan (2012), Oswego County "County Emergency Preparedness Assessments" (CEPA) Reports (2015 and 2017), Oswego County Economic Advancement Plan (2017), and a number of jurisdictions' comprehensive plans, among other resources. A full list of references used during the compilation of this plan update is provided in Section 10.0, Works Cited. Event specific information and details came largely from the Executive Committee and jurisdiction representatives.

An important objective of the HMP update is to incorporate parts of the HMP into future planning efforts and initiatives throughout Oswego County. The HMP will serve as an important resource for developing and updating operation plans and procedures throughout the County. This plan should be incorporated into, considered during, and referenced by future updates and efforts at the County and municipal levels concerning the plans, policies, ordinances, programs, studies, reports, and staff included in Table 3.1 (Appendix A).

3.2 Executive Committee

An Executive Committee was established to discuss the startup and implementation of the hazard mitigation project and to make ultimate decisions, when required, throughout the planning process. Executive Committee members and their affiliations are as follows:

- Terry Bennett – Emergency Services Program Coordinator, Oswego County Emergency Management Office
- Dale A. Currier, CEM, – Director, Oswego County Emergency Management Office
- Dave Turner – Director, Oswego County Department of Community Development, Tourism and Planning
- Reneé Fox – Emergency Medical Services Coordinator
- Don Forbes –Fire Coordinator
- Kurt Ospelt –Superintendent, Oswego County Highway Dept.
- Jim Kelley – Deputy Highway Superintendent, Oswego County Highway Dept.
- Chris Baldwin, P.E. – Engineer, Oswego County Highway Dept.

- Brian Chetney – Executive Director, Oswego County Youth Bureau
- Philip Church – County Administrator
- Terry Wilbur – Chair, Oswego County Legislature's Public Safety Committee
- Linda Lockwood – Oswego County Legislature, District No. 11
- John Condino – Senior Project Manager, Barton & Loguidice, D.P.C.
- Johanna Duffy – Managing Environmental Scientist, Barton & Loguidice, D.P.C.
- Grete Day – Environmental Scientist, Barton & Loguidice, D.P.C.

Details regarding all meetings held throughout the planning process, including participants and objectives, are provided in Appendix C, Meeting Summary.

3.3 Jurisdiction Participation

As noted in Section 1.3, all but one jurisdiction (Town of Minetto) met the participation criteria for the present HMP update. These criteria included:

- Attend at least one working group meeting and/or meet individually with County EMO or B&L representative to complete worksheets;
- Update 2012 information and provide additional information to be included in jurisdictional annex to meet current state and federal mitigation plan requirements;
- Review jurisdictional annex;
- Assist in public review process;
- Pass resolution to formally adopt HMP update.

Many jurisdiction representatives attended at least one working group meeting. Almost all jurisdictions also met individually or in a smaller group with a representative from Oswego County EMO and/or the consultant team to complete their information updates and provide all necessary information to be included in their jurisdiction's annex for the HMP update (Appendix B). A sample adoption resolution is presented in Appendix D.

3.4 Public Participation

A number of public notices were distributed during the early planning stages of the HMP update to inform the public of the process and invite them to participate. The Fact Sheet and Project Kickoff Flyer (Appendix E) were provided to the municipalities and other local agencies to display in their offices. In addition, an article about the HMP update was included in the September 2017 Oswego County Emergency Communications/RACES newsletter (Appendix E).

Jurisdictions were encouraged to discuss the HMP update process and participation at their local board meetings. Meeting minutes from the Town of Hannibal's October 11, 2017 board meeting and the Village of Pulaski's December 18th, 2017 board meeting, which specifically indicate that the HMP update was discussed, are included in Appendix E. The draft plan was added to the Oswego County Emergency Management website for public review in April 2019 (http://www.oswegocounty.com/emo/hazard.html). A public information meeting was held on April 17th, 2019 at the Oswego County Legislature Chambers in Oswego, NY. The deadline for public comments on the draft plan was April 24, 2019. Documentation regarding the public meeting is provided in Appendix E.

3.5 Stakeholder Participation

A list of stakeholders identified for the HMP update is provided in Table 3.2 (Appendix A). All stakeholders were invited to attend the project kickoff meeting on September 27, 2017. Stakeholders were also invited to participate in the County's 2017 CEPA update held on December 12, 2017, a vital portion of the HMP update. Table 3.2 also indicates whether or not stakeholders attended these two meetings and whether they provided additional input for the HMP update. Stakeholder outreach is provided in Appendix E.

4.0 Risk Assessment

Oswego County is vulnerable to numerous natural and technological hazards. The County conducted a County Emergency Preparedness Assessment (CEPA) analysis, facilitated by NYSDHES, on December 12, 2017. During the CEPA update, the County ranked a number of natural and technological hazards. Details on this hazard analysis are provided below.

4.1 Oswego County CEPA Results

Oswego County conducted a County Emergency Preparedness Assessment (CEPA) on December 12, 2017. This event updated the County's previous CEPA that was conducted in 2015. Aside from Oswego County personnel, representatives from many other State and local organizations, agencies, and businesses were present to participate in this event. A complete participation list, including individuals and their affiliations, is included in Appendix C, Meeting Summary.

CEPA is a program that was developed by the NYS Dept. of Homeland Security and Emergency Services (NYS DHSES) to analyze hazard risks and County capabilities during emergency and disaster events. The hazard analysis completed during the CEPA forms the basis for the County's risk and vulnerability assessment.

A number of natural and technological hazards were evaluated by County personnel and agency representatives participating in the 2017 CEPA update. It is noted that some hazards included in the CEPA were not profiled in the plan update because they did not translate to FEMA-defined hazards or were covered under a broadly defined hazard (i.e., cyber attack, illicit drug usage or trade, biological agent release, and others). The group analyzed all hazards determined to potentially affect Oswego County. The CEPA rated each hazard based on the group's assessment for each hazard related to the likelihood and consequence potential of each hazard. The selected hazards were categorized as follows:

Score of 15 or greater = High Hazard
Score of 7 to 14 = Moderate Hazard
Score of 6 or below = Low Hazard

From the 30 hazards analyzed as part of the CEPA, 19 hazards were identified to be profiled for the HMP update and are presented in Table 4.1 below, along with their associated CEPA scores and categories.

Table 4.1 – Oswego County CEPA Hazard Ranking Results
(Oswego County, NYS DHSES, December 2017)

Hazard	CEPA Likelihood Category	Corresponding FEMA Hazard	Selected for Profiling
Severe Wind or Tornado	Very High	Severe Thunderstorm, Wind, or Tornado	Yes
Flooding	High	Flood	Yes
Ice Storm	High	Ice Storm	Yes
HAZMAT in Transit	High	HAZMAT in Transit	Yes
HAZMAT Fixed Site	High	HAZMAT Fixed Site	Yes
Sustained Power Outage	High	Utility Failure	Yes
Compromised Emergency Communication Systems	High	Utility Failure	Yes
Cyber Attack	High	Terrorism	Yes
Severe Winter Snowstorms	Very High	Severe Winter Storm	Yes
International Port Issues	Medium	-	No
Pandemic	Medium	Epidemic	Yes
Active Shooter	Medium	Terrorism	Yes
Major Transportation Accident	Medium	Transportation Accident	Yes
Illicit Drug Usage/ Trade	High	-	No
Animal Disease/ Foreign Animal Disease	Very High	Epidemic	Yes
Radiological Release (Fixed Site)	Low	Radiological (Fixed Site)	Yes
Critical Infrastructure Failure	Low	Utility Failure	Yes
Extreme Temperatures	High	Extreme Temperatures	Yes
Biological Agent Release	Low	Terrorism	Yes
Improvised Explosive Devices (IED)/ Vehicle Born IED	Low	Terrorism	Yes
Radiological Dispersal Device (RDD)	Low	Terrorism	Yes
Food Contamination	Low	-	No
Water Infrastructure/Sources	Low	Water Supply Contamination	Yes
Drought	Medium	Drought	No
Hurricanes/ Tropical Storm (Wind and Surge)	Low	Coastal Storm, Hurricane	No
Major Fires (non-wildfires)	Medium	Fire	No
Improvised Nuclear Devise (IND)	Very Low	Terrorism	No
Earthquake	Low	Earthquake	No
Landslide	Low	Landslide	No
Wildfire	Low	Wildfire	No

Based on the professional knowledge of those present, historical County data, and discussions that occurred amongst the group, the hazards were assessed and ranked based on their likelihood of occurrence and level of consequences. Each hazard is assigned to one of five categories (very high, high, medium, low, or very low) for both likelihood of occurrence and consequence of occurrence. Descriptions of these risk assessment categories referenced for the CEPA update are summarized in Table 4.2, below.

Table 4.2 – CEPA Hazard Risk Assessment Categories *(Oswego County, NYS DHSES, December 2017)*	
Hazard Likelihood	
Very High	Hazard is expected to occur without question based on historical precedence or current intelligence reporting.
High	Hazard is likely to occur based on historical precedence or current intelligence reporting.
Medium	Hazard could occur, but generally does not occur with regular frequency.
Low	Hazard could occur, but very unlikely.
Very Low	Hazard is not expected to occur.

The County's top three rated hazards are severe thunderstorm, wind, or tornado; flood; and ice storm. A list of participants in the County's 2017 CEPA update is provided in Appendix C, Meeting Summary.

4.2 Presidential Disaster Declarations

The President has the sole ability to make an emergency and/or major disaster declaration under the Stafford Act. After a natural disaster event which has caused a severe amount of damage beyond the State and local government response capabilities, the Governor of the impacted state can request a major disaster declaration from the President. The request from the Governor must include an estimate of the amount and severity of damage to the public and private sector, a description of the State and local efforts and resources used in the disaster, preliminary estimate of the type and amount of Stafford Act assistance needed, and certification that the State and local governments will comply with applicable cost sharing requirements. Generally, counties must meet a per capita threshold of damage set by the Federal government. Major disaster declaration assistance generally provides three types of aid: Individual Assistance, Public Assistance, or Hazard Mitigation Assistance. Most declarations will provide either Individual or Public Assistance along with Hazard Mitigation Assistance. Oswego County has been included in 16 Presidential Disaster declarations since 1972, including: 6 floods, 3 snow storms, 2 hurricanes, 1 each fire, severe ice storm, and severe storm, power outage, and virus. Details of these events are provided in Table 4.3 (Appendix A).

4.3 Hazard Identification

Hazard identification was completed by consulting multiple resources to determine potential hazards to be considered for Oswego County. Sources used to identify hazards were the New York State Hazard Mitigation Plan in 2014 and the 2012 Oswego County Hazard Mitigation Plan, and the 2015 and 2017 Oswego County CEPA analyses. The County used New York State's HIRA-NY (Hazard Identification and Risk Assessment – New York) program to rank hazards for the 2012 Plan and for consistency this Plan update uses the same definitions. The County's 2017 CEPA update was used to rank hazards to be included for the HMP update. Hazard rankings from the 2017 and 2015 CEPA events and 2012 HMP are summarized in Table 4.4, below. Hazards selected for further profiling in the HMP update correlated with a FEMA-

defined hazard and had an overall risk ranking of high or moderate. Low-risk hazards were not included for further analysis. While natural hazards are emphasized for this HMP update, the County elected to include several technological or human-caused hazards due to their relative risk. In addition, while infestation is not specifically included in the CEPA hazard list, the County elected to profile it in regard to the spread of emerald ash borer.

Table 4.4 – Ranking Results of Hazards and Comparison to Previous Hazard Analyses
(Oswego County, NYS DHSES, December 2017)

Hazard	Hazard Category	2018 HMP Rank (2017 CEPA)	2015 CEPA Rank	2012 HMP Rank (2009 HIRA-NY)	Potential to be affected by Climate Change
Severe Thunderstorm, Wind, or Tornado	Natural	1	1	1	X
Flood	Natural	2	7	8	X
Ice Storm	Technological or Human Caused	3	2	2	X
HAZMAT in Transit	Technological or Human Caused	4	3	5	
HAZMAT Fixed Site	Technological or Human Caused	5	4	14	
Utility Failure	Natural	6	5	3	
Terrorism	Natural	7	9	6	
Severe Winter Storm	Technological or Human Caused	8	6	12	X
Epidemic	Technological or Human Caused	9	8	13	
Transportation Accident	Technological or Human Caused	10	10	-	
Radiological (Fixed Site)	Natural	11	11	20	
Extreme Temperatures	Technological or Human Caused	12	12	17	X
Water Supply Contamination	Technological or Human Caused	13	13	(not included)	
Infestation	Natural	14 (not included in CEPA)	(not included in CEPA)	(not included)	
Ice Jam	Natural	(not selected)	(not included)	15	X
Coastal Storm	Natural	(not selected)	15	16	X
Earthquake	Natural	(not selected)	17	4	X
Drought	Natural	(not selected)	14	19	X
Landslide	Natural	(not selected)	18	18	X
Wildfire	Natural	(not selected)	20	11	X
Tornado	Natural	(not selected)	(not included)	7	X
Dam Failure	Technological or Human Caused	(not selected)	(not included)	9	
Fire	Technological or Human Caused	(not selected)	16	10	

5.0 Hazard Profiles

5.1 Natural Hazards

The natural hazards that were evaluated as part of the County's CEPA analysis are further detailed below. This information includes a description of the hazard, risk assessment, historical occurrences and damage estimates within Oswego County, and the probability of future hazard events and associated losses. These hazards are discussed in the order that they were categorized, from high hazard events to low hazard events.

Additional information was compiled from local records, the National Weather Service (NWS), and the National Climatic Data Center (NCDC). The NCDC's data incorporates damage estimates, while local records often do not. The NCDC's damage estimates are subject to the NCDC's disclaimer that while the National Weather Service makes an effort to use the best available information to document the occurrence of storms and other significant weather data, some information may be unverified. The NWS estimates damage costs using all available data, but property and crop damages listed for individual storms are considered broad estimates and total damages are often higher than those reported by the NCDC.

5.1.1 Severe Thunderstorm, Wind, or Tornado

Hazard Description

Severe storms as defined by HIRA-NY include severe thunderstorms (with associated severe wind events such as derechos, gustnados, and downbursts), hail storms, and windstorms. The National Weather Service definition defines a severe thunderstorm storm as a storm with a tornado, surface hail ¾" or greater, or wind gusts 50 knots (58 mph) or greater, or all three. Severe thunderstorms can cause damage from wind, hail, heavy rainfall, and/or lightning strikes.

Thunderstorms

The National Weather Service (NWS) estimates that over 100,000 thunderstorms occur each year on the U.S. mainland, and about 10% of these are classified as severe. Thunderstorms can produce deadly and damaging tornadoes, hailstorms, intense downburst and microburst winds, lightning, and flash floods. Downburst winds are strong, concentrated, straight-line winds created by falling rain and sinking air that can reach speeds of 125 mph (200 km/h). Microburst winds are more concentrated than downbursts, with speeds up to 150 mph (240 km/h). Severe damage can result from the spreading out of downbursts and microbursts, which generally last five to seven minutes.

Lightning, which occurs during thunderstorms, can strike anywhere. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with

the best conducting object or surface on the ground. A derecho is a widespread and long-lived wind storm that is associated with a band of rapidly moving showers or thunderstorms. A gustnado is a short-lived, ground-based vortex that develops on a gust front associated with either showers or thunderstorms (National Weather Service, 2009).

Windstorms

Extreme windstorm events are associated with tropical cyclones, winter cyclones, and severe thunderstorms. Winds vary from zero at ground level to 200 mph (89 m/s) in the upper atmospheric jet stream at 6 to 8 miles (10 to 13 km) above the earth's surface. Large-scale extreme wind phenomena are experienced over every region of the United States and its territories. There is potential for winds from 160 to 200 mph to occur in Oswego County, as it is within both Wind Zones 2 and 3 (Figure 5.1, Appendix A).

Hailstorms

Hailstorms are often associated with severe thunderstorms. Hailstorms are characterized by the balls or irregularly shaped lumps of ice greater than 0.75 in (1.91 cm) in diameter which fall with rain. Peak periods for hailstorms are late spring and early summer, the time of year when the jet stream migrates northward across the U.S. Hailstorms can extensively damage agriculture crops, particularly those that are herbaceous and long-stemmed. Severe hailstorms can also cause damage to buildings, automobiles and aircraft, but rarely cause fatalities or serious injury.

Geographic Extent and Frequency

Severe storms can occur throughout a large region of the county but typically affect several individual locations during one event. Severe wind and severe storms occur multiple times per year in Oswego County and arrive with no warning. Additional details regarding the extent of different types of severe storms experienced by Oswego County are provided below.

Thunderstorms are characterized based on the amount of rainfall per duration of time. In Oswego County, rainfall during a two-year storm are typically around 0.93 inches per hour. Rainfalls during a five-year storm are typically around 1.24 inches per hour (NOAA, 2015). The heaviest rainfall in the County tends to occur near the Towns of Hastings, Schroeppel, Redfield, Orwell, and Boylston, as well as the Villages of Phoenix and Central Square.

High winds are characterized using the Beaufort Wind Scale (Table 5.1, Appendix A). High wind events in Oswego County typically have velocities between 50 and 55 knots, though some wind storms have been reported up to 68 knots. Wind velocities between 48-55 knots have a force of 10 (storm) on the Beaufort Scale (Edwards, 2018). Wind forces of 11 (violent storm, 56-63 knots) and 12 (hurricane, 64 knots or greater) have occurred in Oswego County but are not common. Wind gusts or downbursts can be described as microbursts or macrobursts (NWS, 2019). Microbursts extend 2.5 miles or less and last between 5 and 15 minutes, and can cause

winds up to 168 mph. Macrobursts extend greater than 2.5 miles and last between 5 and 30 minutes. These events can cause winds up to 134 mph. Microbursts have occurred in Oswego County in the past.

Hailstorms are categorized on the TORRO Hailstorm Intensity Scale (TORRO, 2019), which is provided in Table 5.2 (Appendix A). The most damaging hail storms that have occurred in Oswego County produced hail that was 2.5 inches in diameter, which corresponds with category H7 on the TORRO Scale.

Tornadoes are measured using the Enhanced Fujita scale. Historically, tornadoes have ranked as an F0 or F1 magnitude on the Enhanced Fujita (F) Scale (with one instance of an F3 tornado) in Oswego County. The Enhanced Fujita Scale is provided in Table 5.3 (Appendix A). Tornados with an F0 or F1 ranking have 3-second wind gusts between 65 and 110 mph.

Historical Hazard Occurrences and Damage Estimates

Severe wind and severe storms can occur throughout a large region of the county and can result in additional hazards such as fire, flood, landslide, structural collapse, transportation accident, and utility failure. Serious injury or death is likely due to this hazard's relationships to motor vehicle accidents, wind damage, or other cascading effects. A severe storm may also result in moderate damage to private property and public facilities.

Major historical severe storm events that have occurred in Oswego County are summarized below. Severe thunderstorms including derechos have occurred in the county but not to the extent of requiring a Presidential Declaration of Disaster. Severe storms in Oswego County have caused property damages ranging from $10,000 to over $200,000 and crop damages ranging from $5,000 to $50,000. Severe storm records with geographic location coordinates provided by the NCDC are also depicted in Figure 5.2 (Appendix A).

- April 16, 2018: 13,000 National Grid customers lost power for up to 36 hours due to high winds gusting to 50 mph throughout the county but mostly in the eastern and central portions.
- July 8, 2014: a severe thunderstorm caused power outages and damage throughout Oswego County. Nearly 10,000 National Grid customers lost power. Trees and wires were pulled down, and several homes in the City of Oswego and Town of New Haven were impacted. The winds destroyed most of the projection screen at the Midway Drive-In (Town of Minetto), which was closed until the screen could be replaced. Wind gusts were recorded at 60 to 70 mph. The NCDC records estimated that this storm caused nearly $50,000 in property damage.

- May 16, 2009: thunderstorms with strong damaging winds traveled from Hinmansville (Town of Granby) to the Town of Williamstown, causing an estimated $10,000 in property damage.
- June 10, 2008: a line of severe thunderstorms with high wind traveled across the Finger Lakes into Oswego County. The storms produced hail up to ¾ inch in diameter and wind gusts estimated to near 70 mph. The storms cut power for several communities through the evening. Phoenix, Oswego and Sandy Pond were hit, with the greatest damage in Sandy Pond and the Town of Sandy Creek. The Town of Sandy Creek declared a local state of emergency. The NCDC estimated a total of $220,000 in property damage.
- November 13, 2003: Strong damaging winds travelled across Lake Ontario. A 165-foot tall cellular tower was toppled and multiple structures lost their roofs in the Town and City of Oswego.
- August 3, 2003: a thunderstorm downburst overturned three small private planes at the Oswego County Airport (Town of Volney). Trees and power lines were downed in the City of Fulton and Town of Volney, and winds tore a roof off of a house in the Town of Granby. The NCDC estimates property damage at $250,000.
- June 26, 2002: the chairman of the Oswego County Legislature declared a county state of emergency due to severe weather that caused downed trees and power lines from the City of Fulton to Town of Redfield.
- September 7, 1998: the Labor Day Storm that traveled across New York State struck the southern end of Oswego County. The derecho caused a power outage and damage in and surrounding the Village of Phoenix.
- Several tornadoes have occurred in Oswego County, including a 1986 tornado that touched down in the City of Fulton. The frequency of occurrence has been about once every other year, with waterspouts forming offshore on Lake Ontario annually. Historic tornado tracks are depicted in Figure 5.3 (Appendix A).

National Climactic Data Center's (NCDC) severe storm records that have occurred since those documented in the County's 2012 HMP are listed in Table 5.4 (Appendix A).

Probability of Future Events and Relation to Climate Change

Severe storms occur within Oswego County multiple times per year, and this frequency will likely continue in the future. A severe storm event could also cause fires, flooding, landslides, utility failure, structural collapse, and transportation accidents. In a worst-case scenario, a severe storm could cause widespread power outages in much of the County, requiring the opening of the County Emergency Operations Center (EOC) to coordinate resources and manage human needs. High winds could cause moderate damage to private property and public facilities. Older structures in deteriorating condition are more likely to incur property damages. Manufactured

and mobile homes are also less able to withstand damages from severe storm events. In Oswego County, nearly one-third (31%) of occupied homes were built in 1939 or earlier, and about 16% are mobile homes.

Severe storms were analyzed as a very high likelihood event during the County's 2017 CEPA update. The County is fairly well equipped and trained to respond to severe storm events; however, upgrading existing equipment along with multi-jurisdictional coordination efforts and agreements may help to alleviate some of the pressure on post-disaster maintenance and clean-up forces.

The frequency and magnitude of severe storm events is expected to be affected by climate change. The amount of precipitation per storm event is expected to increase, while the length of time between such storms is expected to decrease, causing stronger, more frequent severe storms (Rosenzweig et al., 2011; Horton et al., 2014; NYS DHSES, 2014).

5.1.2 Flood

Hazard Description

Flooding is a natural event for rivers and streams. Excess water from snowmelt, rainfall, or storm surge accumulates and overflows onto the banks and adjacent floodplains of these waterbodies. Floodplains are lowland areas located adjacent to waterbodies that are subjected to recurring flood events.

While flooding in Oswego County has been considered a moderately low hazard in the past, the County identified it as a high likelihood of occurrence with a very high consequence rating during the 2017 CEPA update. The hazard became more of a concern in recent years with record flooding of the shoreline of Lake Ontario in 2017 and 2019, and several heavy rainfall events that resulted in flash flooding and areal flooding throughout the County.

Several factors determine the severity of floods, including intensity and duration of rainfall or other water sources. A large amount of rainfall over a short period can result in flash flood conditions. Even a small amount of precipitation can result in flood events in locations where the soil is already saturated or in areas with large amounts of impervious surfaces. Topography and vegetative cover type are also factors that contribute to the severity of flood events. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. Frequency of inundation depends on the climate, soil, and channel slope of a particular area. In regions where substantial precipitation occurs during a particular season each year, or in regions where annual flooding occurs mainly from snowmelt, the floodplains may be inundated almost every year. In regions without extended periods of below-freezing temperatures, floods usually occur seasonally when precipitation is highest. Excessive snowmelt can cause flooding during the spring in areas like Oswego County. Flash floods are characterized by high water velocity and

can cause severe erosion. Coastal flooding, which occurs when water levels rise above normal, is also a major concern in Oswego County along the shore of Lake Ontario. Coastal flooding generally occurs more gradually than flash flooding.

Geographic Extent and Frequency

In Oswego County, flooding can occur along the shoreline of Lake Ontario and along the banks of the county's major rivers (the Oswego River, Oneida River, and Salmon River). The Oswego River drains the Finger Lakes as well as Oneida Lake and the Oneida River. The Salmon River drains the Salmon River Reservoir and western portion of the Tug Hill Plateau. Flooding can also occur throughout the county along smaller streams and ponds.

FEMA updated the floodplain mapping for Oswego County and issued new Flood Insurance Rate Maps (FIRMs) in June 2013. Areas within the Special Flood Hazard Area (SFHA), or 100-year floodplain, are the most vulnerable to flood events. The 100-year floodplain designates an area that has, on average, a 1% chance of flooding in any given year. In Oswego County, the 100-year floodplains are primarily located along the Salmon River between the Salmon River Reservoir and Lake Ontario, along the Oswego River between the County line and Lake Ontario, the Oneida River from Oneida Lake to the Oswego River, and the northern shore of Oneida Lake. FEMA also designates 500-year floodplain areas, which have a 0.2% chance of flooding annually. Floodplain mapping and the NYS Coastal Boundary are shown on Figure 5.4 (Appendix A).

Flooding can occur with several hours warning through monitoring systems by the National Weather Service, hydroelectric plants, highway department personnel and other programs. While serious injury or death can occur but not in large numbers, flooding can result in moderate damage to private property and moderate structural damage to public facilities.

According to Table 5.5 (Appendix A), approximately 23% of Oswego County is within a mapped 100-year floodplain, including 13,494 parcels located among all jurisdictions except the Town of Boylston. Coastal flooding is of concern along the shore of Lake Ontario. Lake Ontario borders seven jurisdictions in Oswego County, including the City of Oswego, and Towns of Oswego, Scriba, New Haven, Mexico, Richland, and Sandy Creek. County press releases regarding a number of recent flood events are provided in Appendix F.

Historical Hazard Occurrences and Damage Estimates

Flooding is New York State's most consistently damaging natural hazard, though Oswego County experiences fewer floods than many other Counties in the State. Major historical flood records and damage estimates in Oswego County are summarized below. NCDC records for flood events that have occurred since those described in the County's 2012 HMP are summarized in Table 5.6 (Appendix A).

- May to September 2019: High water levels on Lake Ontario, 248.98 ft. above mean sea level (amsl), and record precipitation during those months resulted in severe flooding along the Lake Ontario shoreline. Oswego County Legislature Chairman James Weatherup declared a local state of emergency due to flooding conditions on the Lake Ontario Shoreline on May 14 and issued a Local Emergency Order the same day to implement a no wake zone for the shoreline. Both were extended throughout the summer until September 6. All jurisdictions in Oswego County with shoreline property were affected, including the Town and City of Oswego and Towns of Scriba, New Haven, Mexico, Richland, and Sandy Creek. Substantial damage to residences along the shoreline occurred, with many residents reporting repairs made following the 2017 flooding were washed away. Damage estimates were still being compiled in October 2019.
- June 14-15, 2019: Cracks identified by New York State Canal Corporation in the structure that holds a tainter gate adjoining Lock O-1 in Phoenix resulted in a threat of flooding along the Oswego River from Phoenix to Fulton. Eagle Creek Energy Company enacted their Dam Emergency Plan at the Yellow Alert Level. The Canal Corporation closed the Oswego Canal from Lock 0-1 to Lock 0-3, and law enforcement patrolled the area to ensure no boats or anglers entered the water while repairs were made to the tainter gate. The tainter gate was successfully repaired on June 15 and the canal was reopened by 6:30 p.m.
- June 20, 2019: Flash flooding occurred in parts of Oswego County from the Town of Hannibal to the Town of Richland when a system dropped between 2.43 and 4.2 inches of rain from early morning through early afternoon. The Town of Oswego and the City of Oswego declared local states of emergency when many town and city roads were unpassable for several hours due to flooding. Two residences in Oswego Town were condemned following flood damage, and two town roads were closed for a few weeks. Oswego County Legislature Chairman James Weatherup issued a county-wide state of emergency at 2:10 p.m. The City of Oswego required assistance from the county and New York State to address flooding in a water-treatment facility.
- June 20, 2019: Flash flooding throughout Oswego County and especially in the Town of Oswego, where 4 inches of rain had fallen by early afternoon, threatened an earthen dam at the SUNY Oswego Rice Creek Field Station. Due to the threat, the Town of Oswego called for the non-mandatory evacuation of 13 homes downstream and conducted mass-dialing and door-to-door emergency notifications. New York State repaired the dam overnight on June 20-21, allowing residents to return early June 21.
- April and May 2017: High water levels on Lake Ontario (248.95 ft amsl) and record precipitation during those months resulted in severe flooding along the Lake Ontario shoreline. All jurisdictions in Oswego County with shoreline property were affected, including the Town and City of Oswego and Towns of Scriba, New Haven, Mexico,

Richland, and Sandy Creek. A minimum of $23 million damages throughout the County was estimated for businesses, full-time and seasonal residences, and public entities along the lakeshore. Flooding began in early May and continued until early fall. In Oswego County, sanitary sewers in Oswego Town were impacted, and the Port of Oswego in the City of Oswego sustained millions of dollars of damage, along with hundreds of homes and businesses (marinas and campgrounds, among others). A Presidential Declaration in November 2017 provided Public Assistance for damages, and New York State made funds available for uninsured losses by businesses and residents.

- October 27, 2017: Areal flooding occurred throughout the County when approximately 2 inches of heavy lake effect rain fell. Roads in The Towns of Sandy Creek, Richland, Mexico, New Haven and Oswego were impacted and several roads were closed for part of the day due to flooding.
- September 30, 2010: Flash flooding occurred along the Salmon River when 3.2 inches of rain fell on the western side of the Tug Hill Plateau, from the Town of Redfield to Lake Ontario. The flash flood was caused by 3.2 inches of rainfall that fell overnight and the release of 16,000 to 17,000 CFS from two Brookfield Power hydroelectric stations. The high water levels destroyed a retaining wall in the Village of Pulaski and flooded several roads in the Towns of Richland, Albion, and Redfield. The heavy rainfall also resulted in road closures in the Towns of Constantia, Mexico, Parish, Sandy Creek, and Scriba. Property damage was estimated at $100,000, including the Village of Pulaski's retaining wall.
- April 16, 1994: Flooding occurred along the shoreline of Oneida Lake, affecting the Towns of West Monroe and Constantia and Village of Cleveland. The NCDC estimated that this event caused $50,000 in property damages.
- May 1993: Flooding occurred along the shoreline of Oneida Lake. No damage estimates are available.
- December 29, 1984: Flooding along the Salmon River caused evacuation and property damages in the Village of Altmar and Village of Pulaski. This was a presidential disaster declaration, though few records of the event remain.

Probability of Future Events and Association with Climate Change

Flooding in Oswego County is a regular event that occurs between once a year and once every other year. Possible cascading effects from flooding could include dam failure, fire, hazmat (fixed site), oil spill, structural collapse, transportation accident, utility failure, and water supply contamination. Flooding can occur with several hours warning through monitoring systems by the National Weather Service, hydroelectric plants, highway department personnel and other programs. While serious injury or death can occur but not in large numbers, flooding can result in moderate damage to private property and moderate structural damage to public facilities.

Flooding is a concern to the County as a whole, particularly along Lake Ontario, Oneida Lake, and the Salmon River, where large-scale flood events have occurred in the past. Low-lying properties along Lake Ontario are frequently inundated and eroded as a result of minor coastal flooding events.

The Town of Constantia has the greatest number of parcels that intersect the 100-year floodplain (984), which primarily consists of residential properties along the shore of Oneida Lake. The Town of Scriba has the greatest structure value of parcels intersect the 100-year floodplain ($1,795,121,399), which is influenced by the nuclear power plant facilities located along the shore of Lake Ontario. The City of Oswego has the next highest value of properties within 100-year floodplains ($192,026,741).

Flooding has the potential to impact a large number of properties, but likely not all at the same time. It appears that minor damage occurs at an infrequent rate to a small amount of properties within most of the jurisdictions in the County. National Flood Insurance Program (NFIP) policy, claim, and repetitive loss statistics for Oswego County are summarized in Section 8.0.

Climate change is likely to impact the severity and frequency of flooding in Oswego County. With the anticipated increase in severe storms due to climate change, heavy precipitation and associated floods will likely become more common (Horton et al., 2014). The annual average amount of precipitation is projected to increase by up to 10% over the next 30 years. Due to this projected increase, the frequency and severity of flash flooding events in New York State are expected to rise (Rosenzweig et al., 2011). Increased precipitation during winter months could lead to more floods during that time of year, especially if the ground is frozen and less permeable. In addition, rising air and water temperatures would cause ice and snow to melt more rapidly, leading to flooding during the winter and early spring months.

5.1.3 Ice Storm

Hazard Description

Ice storms include freezing rain that accumulates in a substantial glaze layer of ice resulting in serious disruptions of normal transportation and possible downed power lines. The National Weather Service (NWS) uses the term to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in the loss of power and communications. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulation are accumulations of ¼" or greater. Damage can include structural damage, utilities, tree damage due to excessive weight. Ice storms can result in additional hazards of explosion, fire, food shortage, fuel shortage, structural collapse, transportation accident, utility failure, and water supply contamination.

Geographic Extent and Frequency

Ice storms can impact large portions of the County or the entire County at once. Serious injury or death is likely but not in large numbers, and ice storms can cause moderate damage to private property and severe structural damage to public facilities. Storms can occur with several days warning and can last two to three. Freezing rain is forecast at least once a year for Oswego County. The intensity of ice storms is measured using the Sperry-Piltz Ice Accumulation Index (Table 5.7, Appendix A). Ice storms in Oswego County typically correspond with an ice damage index of 2 on this scale. In addition, ice storms often correspond with severe winter storms, which can be characterized using the Regional Snowfall Index (NOAA, 2019) and rate of snowfall per duration of time. The Regional Snowfall Index is provided in Table 5.8 (Appendix A). Snow storms in Oswego County typically result in 12-18 inches of snow accumulation or more per day but do not typically register on the Regional Snowfall Index.

Historical data indicates ice storms have occurred about once a year to once every seven years in the region. The NCDC reports three ice storm events that have occurred in Oswego County, but property damage estimates were included for only one event.

Historical Hazard Occurrences and Damage Estimates

Oswego County has been impacted by three ice storm events in the past. The North Country Ice Storm of 1998 just missed Oswego County. During that storm, Niagara Mohawk Power Corporation (now National Grid) replaced 2,300 large towers and more than 8,000 power poles in multiple counties in Northern New York, with the outage lasting over a month. County ice storm records are detailed below and summarized in Table 5.9 (Appendix A).

- April 3, 2003: An ice storm began on April 3, 2003 and lasted for several days. This storm was a Presidential Disaster Declaration. Up to an inch of ice accumulation was measured, which caused downed trees, limbs, and power and telephone lines, and power outages in some areas lasted a week. Several shelters were opened to house people without utilities. This storm resulted in a Presidential Disaster Declaration and FEMA Public Assistance funding to Oswego County and its municipalities and public agencies totaled $1,539,660**.** This ice storm resulted in $28.6 million in property damage and $8.6 million in crop damages.

Probability of Future Events and Association with Climate Change

Ice storms occur within Oswego County and nearby areas between once a year and once every seven years, categorizing the likelihood of a future ice storm as a regular event. The probability of a future event is moderately high. An ice storm event could cause a variety of cascading effects including explosion, fire, food shortage, fuel shortage, structural collapse, transportation accidents, utility failure, and water supply contamination. An ice storm event with cascading

effects could cause human-needs issues for the County, such as shelter, food, transportation, etc. Fallen trees and power lines could cause structural failures for homes, businesses, and public buildings.

During the 2017 CEPA update, the County ranked ice storms, with at least ½ inch of ice, as having a high likelihood of occurrence and high consequences. Minor ice storm events frequently occur within the County. Oftentimes, sleet and freezing rain are included as a winter storm event and are not specifically classified as an ice storm. The County is only moderately equipped to deal with ice storms, especially severe events.

Climate change will cause a rise in temperatures and total annual precipitation over the next several decades. The impact of climate change on the frequency and severity of ice storms is unpredictable for the northern part of New York State (including Oswego County), while the southern part of the state may experience fewer ice storms (Rosenzweig et al., 2011, Horton et al. 2014).

5.1.4 Severe Winter Storm

Hazard Description

Severe winter storms in Oswego County have a very high likelihood of occurrence but a medium ranking for consequences, according to the County's 2017 CEPA update. Severe winter storms occur more than once a year throughout most or all of the county with several days warning. Such storms last as much as a week and could result in structural collapse and transportation accidents.

A severe winter storm is defined by Oswego County as a heavy lake effect snow storm that puts the county into an emergency condition and/or requires the declaration of a state of emergency or the opening of an emergency operations center. Recent history shows such storms often have a snowfall rate of two to four inches per hour or more.

Outside the normal snow season (before November 1 or after March 31), a heavy snowfall would have a more severe impact, as heavy snow on trees with their leaves still on would bring down branches and power lines. Even areas that normally experience mild winters can be hit with a major snowstorm or extreme cold. Winter storms can result in flooding, storm surge, closed highways, blocked roads, downed power lines and hypothermia. Lake effect snow is created when cold, dry air passes over a large warmer lake, such as one of Lake Ontario, and picks up moisture and heat.

Geographic Extent and Frequency

A severe winter storm according to this definition can immobilize a portion of the County or the entire County, severely limiting the ability of emergency response agencies to respond to local emergencies. Lake Effect Snow Warnings are issued by the NWS when pure lake effect snow may pose a hazard or is life-threatening. Severe winter storms and Lake Effect Snow Warnings occur multiple times per year in Oswego County. Severe winter storms are characterized using the Regional Snowfall Index (NOAA, 2019) and rate of snowfall per duration of time. The Regional Snowfall Index is provided in Table 5.8 (Appendix A). Snow storms in Oswego County often result in 12-18 inches of snow accumulation or more per day but do not typically register on the Regional Snowfall Index.

Historical Hazard Occurrences and Damage Estimates

All NCDC winter storm records that have occurred since those described in the County's 2012 HMP are summarized in Table 5.10 (Appendix A). Major winter storm events for Oswego County are described in detail below.

- December 26, 2017: The City of Oswego declared a local state of emergency and issued a local emergency order for no unnecessary travel and no parking on city streets after a lake effect snow storm dropped over 30 inches of snow on the city in less than 24 hours. During the same storm, the Town of Boylston issued a news release requesting snowmobilers to wait until roads were cleared before traveling town roads. Both municipalities and the Town of Redfield received NYS Department of Transportation assistance to clear roads and intersections.
- December 15, 2016: The NWS issued a blizzard warning for Oswego County. A peak wind gust of 84 mph was measured at the Oswego Harbor, and true blizzard conditions were realized for several hours across much of the county. The high winds tore the roofs of two houses in the Town of Scriba. The National Climatic Data Center estimates damages at $100,000.
- February 3-12, 2007: A record lake effect storm dropped up to 14 feet of snow in some areas of the County. The county opened an Emergency Operations Center on February 8th, closing it 13 days later on February 21st. New York State Governor Eliot Spitzer declared Oswego County a State Disaster Area February 8th and the state's Transportation Infrastructure Group (TIG) was mobilized to assist in snow removal. A Presidential Declaration for a Snow Emergency resulted in a total of $783,341 awarded in public assistance to the county, its municipalities, and public agencies.
- January 28-31, 2004: A lake effect storm impacted the Oswego River Corridor and the central section of the county but caused little impact in the northern region. The FEMA

declared a Snow Emergency for the County. FEMA dispersed more than $349,020 in Oswego County in public assistance costs eligible for reimbursements.

- March 12-13, 1993: The "Blizzard of 1993," which struck the east coast and resulted in a federal declaration of disaster for New York State (3107 EM), dropped almost 50 feet of snow on the City of Oswego in 48 hours.
- January 27-31, 1966: "The Blizzard of 1966" is among the most severe snowstorms to affect Oswego County. It began as a nor'easter which affected the New York City metro area and was followed by heavy "wraparound" lake effect snows. Winds were more than 60 mph. during the storm. The snow was badly drifted and roads and schools closed as long as a week. Drifts covered entire two-story houses. A total of 102 inches of snow was recorded in Oswego.

Probability of Future Events and Association with Climate Change

During the County's 2017 CEPA update, severe winter storms were determined to have a very high likelihood of occurrence and a medium ranking for consequences. As temperatures rise over the next few decades due to climate change, the length of the snow season in New York State is expected to decrease. However, changes in the severity of snow storm events are uncertain, particularly for microclimates like Oswego County and other areas in lake-effect snow zones (Horton et al. 2014).

5.1.5 Extreme Temperatures

Hazard Description

Extreme temperature events are defined by extended periods of excessive cold or hot weather with a serious impact on human and/or animal populations, particularly elderly and/or persons with respiratory ailments. Specifically, prolonged extreme temperature events lasting for at least three days with a temperature colder than -10°F (cold wave) or hotter than 95°F (heat wave) were considered under this hazard. In extreme heat and high humidity, evaporation is slowed and the body must work harder to maintain a normal temperature. Extreme heat exposure may result in symptoms such as sunburn, dehydration, heat exhaustion, or heat stroke. The National Weather Service (NWS) Heat Index, a function of temperature and relative humidity, indicates the likelihood that someone could develop a heat disorders. In extreme cold conditions, people can experience wind chill, frostbite, or hypothermia. Exposure to extreme temperatures for prolonged periods of time can result in death. The NWS wind chill temperature index is a function of temperature and wind velocity. The NWS heat and wind chill indices (Figures 5.5 and 5.6) are included in Appendix A.

Extreme temperature events tend to have greater impacts on vulnerable populations, including older adults (over 65 years), young children (under 5 years), people with health problems, or

people who cannot afford to sufficiently heat or cool their homes. In general, Oswego County jurisdictions and other rural communities are used to excessive cold or hot temperatures. Excessive cold has resulted in ice jams on the Salmon, Little Salmon, Oswego and Oneida Rivers. In Oswego County, extreme temperatures are a moderately low hazard, impacting mostly individuals in vulnerable populations.

Geographic Extent and Frequency

Extreme temperatures can impact a large region within the County or the entire County. Extreme temperature events are highly likely to occur in Oswego County in the future. It is possible for prolonged periods (greater than one week) of extreme hot or cold temperatures to occur anywhere within Oswego County.

Historical Hazard Occurrences and Damage Estimates

Extremely low or high temperatures occur for a period of several days about every other year or every several years. Possibly the coldest recorded temperature in recent Oswego County history occurred in the Town of Redfield during the winter of 2008-2009. Redfield experienced a temperature of 35 degrees below zero Fahrenheit (- 35°F). Many of the northern communities in Oswego County are used to dealing with frequent excessively cold temperatures.

Major extreme temperature events in Oswego County are summarized below. NCDC records for extreme cold/wind chill and frost/freeze events that have occurred since those included in the County's 2012 HMP are summarized in Table 5.11 (Appendix A). Oswego County is primarily impacted by excessive cold events.

- January 24, 2011: An extreme cold/wind chill event occurred, causing about $15,000 in crop damages according to the NCDC.
- February 1, 1993: An Arctic high pressure center descended from the Upper Great Lakes Region and moves into northern New York early on February 2nd. A strong pressure gradient which was set up across the area on February 1st produced northerly winds of 15-30 miles per hour. The strong winds coupled with temperatures between 5 below zero and 10 above zero resulted in wind chill readings of 30-40 below zero in many areas. Temperatures fell so fast in some areas that multiple transmission lines broke, leaving many customers without power. $50,000 of property damage was estimated as a result of this event.
- October 8, 1993: A strong southwesterly flow pushed very mild air into eastern New York resulting in record high temperatures across much of the area, including Albany, Binghamton, and Rosendale. No damage was reported as a result of this heat event.

Probability of Future Events and Association with Climate Change

Extreme temperature events can cause severe injury or death but not in large numbers. Extreme temperatures would cause little or no damage to private property and little or no structural damage to public facilities. Cascading effects could include contamination from extreme heat, fire, ice jam, transportation accident, and utility failure.

None of the recent extreme temperature events have caused any concerns regarding an increase in frequency or severity of such events within Oswego County or the County's ability to handle such events. However, extreme temperature events are likely to change over the next century related to climate change. It is anticipated that extreme heat events will increase in frequency and duration, and extreme cold events will likely decrease due to an average increase in overall temperature (Horton et al., 2014).

5.1.6 Infestation

Hazard Description

Oswego County is vulnerable to an infestation due to this hazard's moderate extent and moderate impact potential. The emerald ash borer (EAB) is of primary concern. Much of the County consists of undeveloped forested land. Ash trees comprise up to 16-30% per total basal area of forests in the County according to the NYSDEC (Figure 5.8, Appendix A of the main body of the plan), which are susceptible to emerald ash borer infestation.

Geographic Extent and Frequency

An EAB infestation could affect any locations in the County with ash trees. Stands of ash trees along roadways are of primary concern. There are existing EAB populations in the southern portion of the County and it is expected that EAB will continue to spread throughout the entire county in the coming years.

Historical Hazard Occurrences and Damage Estimates

Existing EAB infestations were confirmed in the southern part of Oswego County in 2017, and confirmed in the Town of Sandy Creek in 2018. Jurisdictions in the southern portion of Oswego County, including the Towns of Hannibal, Granby, Volney, Schroeppel, Palermo, Hastings, West Monroe, and Constantia, Villages of Hannibal, Phoenix, Central Square, and Cleveland, and City of Fulton are within the EAB restricted zone defined by the NYSDEC. The restricted zone in NYS generally encompasses existing infestation locations as of May 2017. The transport of ash tree materials (wood, logs, untreated firewood, nursery stock, and wood chips) outside of the restricted zone was prohibited under 6 NYCRR 192.7, Control of the Emerald Ash Borer in order to control the spread of this species and protect existing, un-infested stands of ash trees. In

addition, this legislation prohibited the transport of untreated firewood originating anywhere in NY State more than 50 miles from its origin. The NYSDEC repealed this law on July 25, 2018. It was determined that the regulations were no longer effective in slowing the spread of EAB, and the financial costs of implementing the regulations outweighed the benefit of protecting the existing ash stands. The NYSDEC noted that harvesting ash trees before infestation spreads further is likely in the best interest of foresters and land owners (NYSDEC, 2017.

Probability of Future Events

The EAB is likely to continue to spread throughout Oswego County. Susceptible areas include forested land dominated by ash trees, in addition to County road right-of-ways along forested areas, parkland, and trails. As EAB spreads and ash trees die, the trees could fall at any time and cause injury, property damage, or utility outages if along roadways. More populated areas with ash trees planted along Village or neighborhood streets are also susceptible to infestation. The loss of street trees can result in a significant aesthetic change to established residential areas. National Grid, the utility providing electric and gas service to Oswego County, has implemented a formal tree cutting program to minimize power outages and damage where trees are poised to fall on electric lines as a result of the widespread emerald ash-borer infestation.

5.2 Technological or Human-Caused Hazards

5.2.1 Hazardous Materials in Transit

Hazard Description

Hazardous materials (in transit) consists of an uncontrolled release of materials during transport, which when released can result in death or injury to people and/or damage to property and the environment through the material's flammability, toxicity, corrosiveness, chemical instability and/or combustibility.

Geographic Extent and Frequency

A hazardous materials in transit incident could occur anywhere within the County but is more likely to occur along the following major transportation corridors: Interstate Route 81/US Route 11/ CSX north-south rail line, State Route 481, US Route 104, the Oswego River, the Oneida River, (sections of the NYS Barge Canal System), and the Port of Oswego located at the mouth of the Oswego River.

Historical Hazard Occurrences and Damage Estimates

The Oswego County Hazardous Materials team has responded to a number of Response Level III incidents (according to the National Incident Management System incident ranking criteria) over the past several years. The County response to 6 Level III or greater HAZMAT in transit

accidents annually, and 12 incidents per year that are below Level III. Major events are detailed below.

- In November 2005, 28 cars and an engine of a CSX train derailed in the Village of Central Square, next to a major bridge on US Route 11. Four rail cars carried liquefied chlorine and two others were transporting liquid sodium hydroxide. While only a small amount of sodium hydroxide leaked, the potential for release during the retrieval of the tanks was high and the County Hazmat Team, Fulton Fire Department Hazmat Team, Central Square Fire Department, and 14 other emergency response agencies (fire, law enforcement, emergency medical services, state and local emergency management) were on the scene for several days.
- In March 2007, a stolen propane delivery truck crashed on a street in the Village of Pulaski, next to the Salmon River. The propane tank remained intact during the accident, but the potential for an explosion while it was recovered led to a voluntary evacuation of a 2-mile radius, which took several hours as police and fire agencies went door-to-door to inform neighboring residents of the event.
- On August 31, 2012, an ammonia spill occurred at the Birdseye Plant in the City of Fulton. The spill was effectively contained by emergency responders, including the Oswego County Hazardous Materials Team, Oswego County Health Department, NYSDEC Spill Response, and the Fulton Fire Department. Residents around Jerome Street and Gansvoort Street were evacuated out of caution. The Fulton War Memorial and Community Room at the Fulton Municipal Building were opened for any residents who wished to stay overnight outside of the affected area. A public notice regarding this event is included in Appendix F.
- In March 2015, a propane truck travelling through the County experienced an internal leak.
- In March 2015, a vehicle entered the Oswego River at Stop 13.
- In November 2015, a motor vehicle accident caused a car on a bridge to leak into a stream.
- A motor vehicle accident occurred in the Town of Granby on NY-3, involving a tank truck that caught on fire.
- A motor vehicle accident caused an asphalt tank truck to spill.

Recent events have not resulted in death or injury and have only involved fairly minor levels of property damage. A large-scale hazmat event has the potential to carry with it a long recovery period, a large amount of damage, and a high damage cost estimates. The greatest cost associated with previous hazmat events in Oswego County has been personnel time spent cleaning up the incident site.

Probability of Future Events

The hazardous materials teams in the County respond to several hazardous materials incidents a year. The potential for a large-scale hazmat in transit event is high on Interstate Route 81, State Route 481, and a primary CSX rail route that runs parallel to Interstate Route 81. Other potential locations where a hazardous materials incident could occur include the County Airport in the Town of Volney and the Port Authority properties in the City of Oswego.

The uncontrolled release of materials during transport, which when released can result in death or injury to people and/or damage to property and the environment through the material's flammability, toxicity, corrosiveness, chemical instability and/or combustibility. While the majority of hazardous materials incidents in the County involve petroleum products, a significant number may involve extremely hazardous substances. The release of an extremely hazardous substance could cause widespread injury or death in the area in which it is released.

The probability of future hazardous materials in transit events within Oswego County is moderately high and was determined to be a regular event, occurring between once a year and once every seven years. There is some potential for cascading effects from a hazmat-in-transit event, depending upon the nature of the incident. Cascading hazards could include explosion, fire, hazmat (fixed site), oil spill, structural collapse, transportation accident, utility failure, and water supply contamination.

5.2.2 Hazardous Materials Fixed Site

Hazard Description

Hazardous materials (fixed site) consists of consists of an uncontrolled release of material from a stationary facility, which when released can result in death or injury to people and/or damage to property and the environmental through the material's flammability, toxicity, corrosiveness, chemical instability and/or combustibility.

Geographic Extent and Frequency

Individual facilities housing hazardous materials are located throughout the County. A greater concentration of hazmat sites is located in the Cities of Oswego and Fulton.

Historical Hazard Occurrences and Damage Estimates

Hazardous materials incidents have occurred in recent history; however, none have resulted in large, damaging incidents and remained mostly contained at the facility sites. The safety and emergency response procedures in place at the facilities that house hazardous materials, and the availability and expertise of special operations teams to handle hazmat incidents, lowers the County's vulnerability to hazmat incidents. Having this safety network in place limits the

amount of damage that occurs within Oswego County in association with hazmat – fixed site hazard events. Recent HAZMAT fixed site incidents that occurred in Oswego County are described below.

- August 2012: Ammonia Leak at former Birdseye Foods Plant. Affected residents were sheltered at Fulton War Memorial.
- December 2013: Ammonia Leak at K&N Foods. A shelter in place message was sent to 572 phones.
- June 2017: Freon Leak in Fulton City Hall.
- August 2017: Odor in Campus Building at SUNY Oswego. Two workers were transported for medical treatment. The chemicals involved in drain cleaning produced hydrogen sulfide gas.
- November 2017: Acid vapors at Champlain Valley Specialty of NY (off of NY-104 in the Town of Oswego). Workers were affected by vapors from stripping epoxy floor finish.

Probability of Future Events

A hazardous materials accident at a fixed site in Oswego County is possible. The County currently has 56 facilities that report having Extremely Hazardous Substances (EHS) under the federal SARA Title III. The Tier II reports for these facilities are on file through the Oswego County Local Emergency Planning Committee at the Oswego County Emergency Management Office. These sites have emergency plans in place in case such a hazard event should arise. The larger facilities conduct training activities with the Oswego County Hazardous Materials Team and other response agencies during drills and exercises. A hazmat incident at one of these noted facilities could cause an evacuation. It was determined that a fixed site incident could cause serious injury or death but not in large numbers. The facility itself would be damaged, but there would be little or no damage to private property or public facilities.

Hazardous materials events that occur at a fixed site were considered to have a high likelihood of occurrence in Oswego County with high consequences. During the Oswego County hazard analysis, it was determined that hazmat incidents occur regularly, but are often contained by the responding fire department(s) and hazardous materials team resulting in no damage to adjacent property and not deaths or serious injury. There is also some potential for cascading effects, which could include explosion, fire, oil spill, structural collapse, or water supply contamination, depending upon the nature of the incident.

5.2.3 Utility Failure

Hazard Description

Utility failure includes the loss of electric and/or natural gas supply, telephone service, or public water supply as a result of an internal system failure and not by the effects of a natural disaster. A widespread electrical power outage could cause traffic accidents, and failures to other utility infrastructure that relies on electricity. Sustained power outage (three days or more) have a high likelihood of occurrence and would have high consequences in Oswego County. A widespread electrical power outage could cause traffic accidents at stoplights, civil unrest, and failures in other essential utilities such as water and sewage that depend on electrical power. While utility failures that have occurred in the past have been minor, a prolonged event could stress emergency services. Most utility failures that occur in Oswego County are the result of natural hazards such as severe storms, ice storms, and winter storms.

Geographic Extent and Frequency

Power outages could occur throughout a large region in the county and could result in other hazards such as fire; food shortage; fuel shortage; failures of utilities, and water supply contamination. Power outages occur with no warning several times a year throughout Oswego County and can last two to three days. Serious injury or death is likely, but not in large numbers, and this hazard could cause moderate damage to private property and little or no structural damage to public facilities.

Historical Hazard Occurrences and Damage Estimates

Oswego County has been impacted by several utility failure events, summarized below.

- June 27, 2007: A telecommunications outage for the Windstream network around the City of Fulton affected telephone and related services for several hours.
- August 2003: A blackout impacted much of the Northeast United States. Power was restored by the following day. This power outage event was declared a Presidential Disaster, authorizing up to $5 million in federal funding to reimburse local and state governments that were impacted by the occurrence.

There are no other records of extensive utility outages recorded for the County. It is common for public utilities to be temporarily affected during severe storm events. The frequent utility failure events that occur commonly result in no damage to private property or public infrastructure. A prolonged utility failure such as power outage could stress the County's emergency response and public response agencies. Recent history indicates utility failures caused few issues to people or property.

Probability of Future Events

Utility failure is documented as a regular event, estimating the occurrence of this hazard at between once a year and once every seven years. A worst-case scenario of a utility failure is highly likely to cause cascading effects. A prolonged outage could cause food and fuel shortages, water supply failures, and fires. While the cascading effects of a utility failure could be devastating, recent history in Oswego County indicates that such events have been more of an inconvenience than a disaster.

5.2.4 Terrorism/Large-Scale Violent Attacks

Hazard Description

Terrorism is defined by the FBI as the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. Terrorism and large-scale violent attacks may cause community disruption and/or multiple injuries or deaths.

Geographic Extent and Frequency

A terrorism event or large-scale violent attack could occur anywhere in the County but is more likely at one of the critical facilities identified within the County. Locations of schools, colleges, power generating stations, and transportation centers are likely areas of highest risk for such an event. County critical facilities are depicted on Figure 2.9 (Appendix A).

Historical Hazard Occurrences and Damage Estimates

Terrorism events specific to Oswego County consist of bomb threats at multiple schools. While these events caused no serious injuries, they did disrupt the schools and presented a hazardous situation for emergency services and personnel. The only act of terrorism in recent years that was declared a Presidential disaster was the attacks on September 11, 2001. The disaster declaration for this terrorist attack included all Counties within New York State.

Although the severity of a terrorism event or large-scale violent attack would be high, the damage to private property would likely be low. Damage to critical facilities has the potential to be high or moderate, depending on the location and specifics of the incident. Currently, the federal Department of Homeland Security is bolstering law enforcement and emergency response agencies' abilities to respond to and prevent future terrorist attacks. This Country-wide watch on terrorist activity helps areas like Oswego County maintain a low probability status associated with large terrorist events. Oswego County and its municipalities, school districts, law-enforcement, emergency response agencies, and private entities such as nuclear power plants

and major industry have implemented active shooter response plans that include training and exercises.

Probability of Future Events

Terrorism and large-scale violent attacks are infrequent in Oswego County. The severity of a terrorist attack or large-scale violent attack would likely be high, especially related to the number of injuries that may occur. Possible cascading effects associated with terrorism include civil unrest, dam failure, epidemic, explosion, fire, flood, fuel shortage, hazmat (fixed site), hazmat (in transit), oil spill, radiological (fixed site), radiological (in transit), structural collapse, transportation accident, utility failure, water supply contamination, and wildfire.

5.2.5 Epidemic

Hazard Description

An epidemic is the occurrence or outbreak of disease to an unusual number of individuals or proportion of the population, human or animal.

Geographic Extent and Frequency

An epidemic has a medium likelihood of occurrence with high consequences in Oswego County, according to the 2017 CEPA results. An epidemic could affect the entire County or a large region of the County.

Historical Hazard Occurrences and Damage Estimates

In August 2018, mosquitoes in Toad Harbor Swamp in the Town of West Monroe tested positive for eastern equine encephalitis (EEE). Two horses, one in West Monroe and the other in the Town of Williamstown, died of EEE in August and October 2018, respectively. No human cases of EEE were reported between January 2017 to October 2018, and one human case of West Nile Virus was reported in Oswego County in 2017 (NYSDOH, 2017 and NYSDOH, 2018).

The H1N1 flu virus affected Oswego County in 2009. This epidemic event has not reached the damaging proportions that were initially projected, both in the County and in the United States. This recent epidemic incident has added more potential to this hazard event. No epidemics in Oswego County history have caused emergency conditions.

Since there are no documented epidemic hazard events that have occurred in Oswego County in recent history, it is difficult to estimate potential damages due to such an event. A severe epidemic has a large potential to cause multiple deaths and create economic hardships for numerous residents. An epidemic event would likely cause the most damage in more densely developed areas such as the City of Fulton and City of Oswego, or at SUNY Oswego and

Cayuga Community College, where a large amount of people frequent a small area of the County.

Probability of Future Events

Mosquito-borne illnesses such as eastern equine encephalitis (EEE) are of primary concern in Oswego County. Mosquitoes are monitored in the Toad Harbor Swamp for these viruses, and the County conducts monitoring annually in portions of the Towns of Hastings, West Monroe, and Constantia along Oneida Lake to control mosquito populations. The County Health Department also conducts a public health education program on preventing mosquito bites. If an outbreak of EEE were to occur in the County, it could result in multiple infections or deaths.

5.2.6 Transportation Accident

Hazard Description

A transportation accident is defined as an accident on land, water, or in the air resulting in mass casualties or a substantial loss of property.

Geographic Extent and Frequency

According to the 2017 CEPA update, a transportation accident has a medium likelihood of occurrence with high consequences in Oswego County. The County contains a number of major transportation routes (Interstate 81, U.S. Route 11, State Route 481, State Route 104, State Route 3, and a number of other state and county routes). In addition, a transportation accident could occur on waterways within the County such as the Salmon, Little Salmon, Oswego and Oneida Rivers, Oneida Lake, the Oswego Harbor, and Lake Ontario. The Oswego County Airport functions as a relief for the Syracuse Hancock International Airport, and therefore an air transportation accident has potential to occur in Oswego County as well. As described in Section 2.6, all railroads within the County are freight-only lines. In particular, there is high potential for transportation accidents to occur on heavily travelled roadways, especially as a result of poor road conditions during a winter storm or ice storm. Though only a small geographic area of the County would be affected by a transportation accident, this hazard has the potential to lead to multiple severe injuries or loss of life.

Historical Hazard Occurrences and Damage Estimates

While small-scale vehicular accidents are relatively common in Oswego County, especially in poor weather conditions, there are no records of major transportation accidents involving mass casualties or substantial loss of property in the County. However, even small-scale transportation accidents have the potential to cause serious injury or death to a small number of people.

Probability of Future Events

Major transportation accidents are infrequent, but the County remains susceptible to future incidents along major transportation routes, particularly as a result of natural hazards such as a severe winter storm or ice storm. A number of multi-vehicle accidents have occurred along Interstate 81. Transportation accidents do not pose a large risk to infrastructure, however, they are likely to cause injuries or loss of life. Maintaining roadway safety and clearly designating evacuation routes can aid in prevention of transportation accidents.

5.2.7 Radiological Fixed Site

Hazard Description

A radiological fixed site event is detailed as a release or threat of release of radioactive material from a nuclear power generating station or research reactor or other stationary source of radioactivity. Commercial nuclear power generating facilities have the greatest concentration of radioactive materials of any private source (HIRA-NY, Definitions of Hazards).

Geographic Extent and Frequency

The area affected by life-threatening effects of a nuclear power plant incident would be well within a 10-mile radius. Oswego County has established a 10-mile Emergency Preparedness Zone around the three nuclear power generating sites located within Oswego County and has established substantial public notification and planning efforts in that area.

Historical Hazard Occurrences and Damage Estimate

Oswego County is home to three nuclear power plants located in the Town of Scriba – Exelon Generation's Nine Mile Point Nuclear Station Units 1 and 2 and the James A. FitzPatrick Nuclear Power Plant. The construction and safety features of the plants, regulated by the Nuclear Regulatory Commission, help to keep the possibility of an incident that affects the health and safety of the public very low. In addition, notification systems to government and emergency response agencies as well as the general public are in place and tested regularly, as are emergency response plans.

The three plants in Oswego County have never had an incident that has resulted in harm to any member of the public. These plants continue to operate under stringent safety regulations. Oswego County has developed the Oswego County Radiological Emergency Preparedness Plan to respond to nuclear power plant emergencies. The County reviews, revises, and exercises this preparedness plan on an annual basis with representatives of the nuclear industry and New York State.

While the nuclear power plants have had to consult their emergency plan for several emergencies during their 30-plus year operation life, none of the emergencies have caused any threat to public health and safety. No details are available regarding previous emergency events that have occurred at the nuclear power plant sites in Oswego County. These events did not compromise public health or safety and did not create any public property or critical facility damage. A radiological – fixed site event has a low probably of occurrence within Oswego County.

Probability of Future Events

A nuclear power plant accident causing harm to the public health and safety is documented as a rare event, meaning that it is estimated to occur less than once every 50 years. During the 2017 CEPA update, the County determined that a nuclear power plant accident would have a low likelihood of occurrence, but very high consequences according to HIRA-NY definitions. Potential cascading effects related to a fixed-site radiological release include air contamination, civil unrest, and transportation accident. Any incidents of serious injury or death from a nuclear power plant incident would be well within the established 10-mile radius.

5.2.8 Water Supply Contamination

Hazard Description

Water supply contamination is defined as the contamination of surface or subsurface public drinking water supply by chemical or biological materials that restricts the use of the water source. Groundwater wells can experience contamination due to flooding, stormwater recharge (the percolation of stormwater runoff from the soil surface to groundwater), fertilizer runoff, or hazardous material spills.

Geographic Extent and Frequency

The County determined that water supply contamination has a low likelihood of occurrence but high consequences if it were to occur. Contamination of public water supplies could occur in any location with a municipal water system. As summarized in Table 2.10 (Appendix A), 24 jurisdictions are at least partially served by public water supply systems. Most systems are supplied by groundwater wells. The others are served by the Onondaga County Water Authority (OCWA) which provides water from Lake Ontario and other sources in these locations. Several municipalities are currently undertaking projects to expand their existing water service areas, including the Towns of Hastings, Richland, and Sandy Creek.

Historical Hazard Occurrences and Damage Estimates

There are no reports of public water supply contamination within Oswego County. Contamination of public water systems can necessitate costly system projects in order to improve or replace existing infrastructure (tens to hundreds of thousands of dollars).Many residents in

Oswego County depend on private wells. In some areas, water quality is an ongoing concern. In addition, flooding can contribute to well contamination, which is a growing concern throughout the County, particularly along the shore of Lake Ontario. Contamination issues with private wells require disinfection and/or filtration systems to be installed, which can cost hundreds to thousands of dollars.

Probability of Future Events

The probability of a water supply contamination event to occur in Oswego County is relatively low. However, many municipalities with public water systems rely on groundwater wells. Groundwater supplies can be contaminated due to flood events, hazardous material spills, or vandalism. If such an event were to occur, a number of injuries and significant damage to public infrastructure could result.

6.0 Hazard Vulnerability

6.1 Identified Assets

Representatives from each participating jurisdiction updated the critical facilities for their Town, Village, or City in tables and mapping. The locations of critical facilities such as municipal buildings, fire departments, police stations, healthcare facilities, post offices, cell towers, utility properties, etc. were included on each jurisdiction's figure (located in each jurisdictional annex, Appendix B). Lists of all critical facilities within each jurisdiction are provided within each jurisdiction's annex (Appendix B), and critical facilities for Oswego County are listed in Table 6.1 (Appendix A) and shown on Figure 2.9 (Appendix A) shows Oswego County's critical facilities. Potential emergency shelter locations are addressed individually in each jurisdictional annex (Appendix B). A comprehensive list of potential emergency shelters located within Oswego County is provided in Table 6.2 (Appendix A).

In order to assess the vulnerability of assets, jurisdiction representatives estimated the number of properties in multiple land use categories (residential, commercial, industrial, agricultural, religious/non-profit, government, education, and utilities) and number of people within their jurisdiction that could be impacted by a particular hazard event. These estimates were analyzed for each natural hazard that may affect the community. Some hazards were grouped together on one sheet if they constituted similar impacts or areas to the community.

6.2 Damage Potential

The damage potential for housing within Oswego County was estimated using housing characteristics and values reported by the U.S. Census Bureau's American Fact Finder. According to the 2016 American Community Survey, Oswego County had 45,374 occupied housing units; 72.4% were owner-occupied and 27.6% were renter-occupied. The housing vacancy rate is 15.5%. Tables 6.3 to 6.5, below, indicate the types of housing units, age of structures, and housing unit values within Oswego County.

Table 6.3 – Housing Types in Oswego County
(2016 American Community Survey – U.S. Census Bureau)

Type of Housing	Percent of Total Occupied Housing Units in County
Single unit structures	66.90%
Multi-unit structures	17.20%
Mobile homes	15.90%

Table 6.4 – Age of Structures in Oswego County
(2016 American Community Survey – U.S. Census Bureau)

Structure Built Date	Percent of Total Owner Occupied Housing Units in County
2000 or more recent	8.20%
1980-1999	27.40%
1960-1979	21.60%
1940-1959	11.70%
1939 or prior	31.10%

Table 6.5 – Housing Value Ranges in Oswego County
(2016 American Community Survey – U.S. Census Bureau)

Value	Percent of Total Owner Occupied Housing Units in County
$50,000 or less	16.40%
$50,000 - $99,000	36.50%
$100,000 - $149,000	22.20%
$150,000 - $199,000	13.10%
$200,000 - $299,000	8.30%
$300,000 - $499,000	2.30%
$500,000 or greater	1.10%

According to Table 6.3, 42.8% of the residential infrastructure in the County was constructed prior to 1960, with 31.1% of homes built in 1939 or earlier. Older houses are typically more susceptible to impacts or damage from a flood (if the structure pre-dates floodplain development standards), as well as an ice storm, winter storm, windstorm, fire event, etc. Mobile homes (15.9% of homes within the County) are also particularly vulnerable to storm damages. In addition, approximately 15.5% of homes within the County are vacant. Vacant structures are not always well maintained, making them more susceptible to damage from storm events.

According to the 2016 American Community Survey, the estimated median value of an owner-occupied housing unit in Oswego County is $96,000. If 1% of the occupied houses in Oswego County each sustained $1,000 in minor damages from a storm event, this would total over $450,000 in damages. The total assessed full market values of properties within the County by jurisdiction are listed in Table 6.6 (Appendix A). The ranges of potential damages, in dollars, to vulnerable structures due to a variety of natural hazards are listed in Table 6.7, below.

Table 6.7 – Range of Potential Damages ($) to Vulnerable Structures due to Natural Hazards

Natural Hazard	Damage Potential	Loss of Life Potential
Severe Thunderstorm, Wind, or Tornado	$1,000 - $5,000 each event; $73,000 annually	Moderate
Flood	Tens of thousands to hundreds of millions each event	High
Severe Winter Storm, Ice Storm	$10,000 - $500,000 each event	Moderate
Extreme Temperatures	$0 - $5,000 each event	Moderate

6.3 Development Trends

6.3.1 Vulnerable Populations

People under the age of 5 or 65 years and older are considered to be in vulnerable age groups The 2016 American Community Survey estimates that Oswego County has a vulnerable age population of approximately 23,862 people, approximately 19.8% of the County's total population. Of this total, 5.5% are under 5 years old (0.7% decrease compared with the 2000 Census data) and 14.3% are 65 years of age or older (3.0% increase compared with the 2000 Census data).

In addition to those in vulnerable age groups, the poor are especially susceptible to disasters as they may not have access to resources needed to prepare for, respond to, and recover from these events. The 2016 American Community Survey estimates that 18.3% of people in Oswego County have incomes below the poverty level, which has increased by 4.3% since the 2000 Census (14.0%).

6.3.2 Housing Availability

The vast majority (72.4%) of occupied housing units in Oswego County are owner-occupied. The median value of owner-occupied housing units in Oswego County are approximately $33,000 less than those in neighboring counties, on average. Further details regarding housing availability and trends in Oswego County may be found in the County's 2017 Economic Advancement Plan- Existing Conditions Analysis.

6.3.3 Recent and Planned Development

Operation Oswego County (OOC) administrates the County's Industrial Development Agency (IDA) and owns and manages a number of properties throughout the County. The County has industrial parks in the Towns of Schroeppel and Volney and the City of Oswego. OOC provides assistance to new businesses starting up in the County and provides programs for minority and women-owned businesses and small businesses. Most economic developments in Oswego County reported by the OOC in their annual reports consist of improvements to or expansions of existing businesses at their existing locations. New businesses have also leased or purchased properties in the County's existing business parks or redeveloped existing lots. Highlights of new construction that has taken place throughout the County is summarized in Table 6.8, below.

Table 6.8 – New Development in Oswego County
(Operation Oswego County, 2012-2017 Annual Reports)

Name	Year	Jurisdiction	Description
Cayuga Community College	2012	(C) Fulton	CCC opened its Fulton campus.
St Francis Commons	2012	(C) Oswego	New senior living facility.
Premier Living Suites	2013	(C) Oswego	New student housing complex.
FX Caprara	2013	(V) Pulaski	Two new car dealership buildings constructed in Village of Pulaski.
Tailwater Lodge	2014	(T) Albion	Tailwater Lodge, a hotel and conference center located on the Salmon River, opened in 2014. The hotel implemented an expansion including a new banquet and catering facility in 2017.
Eagle Beverage Company	2014	(T) Oswego	Constructed a new warehouse and distribution center at existing Oswego location.
Holiday Inn Express	2014	(C) Oswego	New hotel.
Dollar General	2015	(T) Minetto	New store constructed at previously vacant site.
Byrne Dairy	2015	(T) Schroeppel	New store constructed.
Home2 Suites by Hilton	2016	City of Oswego	New hotel.
Aldi	2017	(C) Fulton	New store opened at former site of Nestle plant.
Lakeside Commons LLC	2018	(T) Oswego	New student housing complex.
EJ USA	2018	(T) Schroeppel	EJ USA began constructing a new manufacturing facility at the County Industrial Park in Schroeppel. The company will move to this location from its current location in Cicero, NY (Onondaga County).
Solar Farm- Volney	2018	(T) Volney	New solar farm was activated in July 2018 and will power numerous County government facilities. Part of NY-SUN Program under NYSERDA.

The Start-Up New York Program allows new and expanding businesses to operate tax-free for 10 years if they partner with a New York State college or university. This program may help bring more development to Oswego County around the SUNY Oswego or Cayuga Community College campuses. Both colleges were approved by the state to be included in this program in 2014.

Several new developments are in progress throughout the County. Finger Lakes Stairs & Cabinets is planning to construct a new manufacturing plant in the Town of Schroeppel. Avangrid Renewables recently proposed to develop a large wind farm (Mad River Wind Farm) bordering the Town of Redfield in Oswego County and Town of Worth in Jefferson County. This project is currently under review by local municipalities. In addition, the Galloo Island Wind Farm (by Apex Clean Energy) was proposed, which would involve a 33-mile, 138-kilovolt underwater transmission line connecting a substation on Galloo Island (Jefferson County) to an existing National Grid substation in the City of Oswego (located at 110 Mitchell St). Champlain Commons, a 56-unit apartment complex (with 17 units for high-need residents) located in the Town of Scriba, opened in 2019. Finally, the Harbor View Square Waterfront Revitalization Project was proposed in the City of Oswego. This project involves a mixed residential and commercial development on the former Flexo Wire property on W. First St.

Any future developments within the County will be compared to the goals and objectives stated in this plan, which will be linked to the Comprehensive Plans and Land Use Plans of all applicable jurisdictions within the County for use by the Town/Village Boards and Planning/Zoning Boards. The County hopes that documents like the Hazard Mitigation Plan will assist the local jurisdictions in implementing informed residential planning and development reviews to limit the amount of construction activities within known hazard areas. As summarized in Section 7.1, one of the County's objectives under Goal 4: Protect the Environment, Private Property, and Community Facilities, is to promote smart development. Smart development, or smart growth, encourages a community to develop in a manner that protects natural resources and uses existing developed land to the extent possible. Smart growth involves a mixture of land uses, use of compact building design, offering a variety of housing types and transportation methods (including walkable neighborhoods), the preservation of natural resources, agricultural land, and open space, and focus development within already developed areas (USEPA, 2018).

7.0 Hazard Mitigation and Adaptation

7.1 Hazard Mitigation Goals and Objectives

Oswego County and participating jurisdiction representatives developed the following goals and strategies based on the risk assessment results, County vulnerabilities, and County and jurisdictional capabilities. Goals are broad policy-type, long-term statements that represent global visions (FEMA 386-3, 2003). The goals and objectives identified by this process represent what the participants were hoping to achieve through the implementation of this hazard mitigation plan. Specific mitigation strategies were identified that support the goals and objectives of this plan. These strategies were adjusted as a result of hazard research, working group member input, Oswego County personnel input, and comments received during the public review process.

Each identified goal includes a list of associated objectives that further delineate the specific strategies or implementation steps associated with that goal. Unlike goals, objectives are specific and measurable (FEMA, 386-3, 2003). The objectives were based on generally grouping common mitigation strategy themes that were identified during working group meetings and County representative meetings. All goals identified as a result of the risk assessment process are compatible with the goals of Oswego County, as identified in the County's Comprehensive Plan.

The five mitigation goals and their associated objectives have been revised for this plan update and are detailed as follows:

Goal 1: Increase Community Education and Disaster Preparedness

Objectives:

a. Educate Town/Village Boards and Officials on implementation of new codes or project reviews.

b. Educate public on how to prevent impacts from hazard events.

c. Educate public how to prepare for hazard events and the course of action to follow if emergencies occur.

d. Alert community of emergency shelter locations and procedures during an emergency – establish shelter locations if necessary.

Goal 2: Encourage Partnerships and Mutual Aid Agreements

Objectives:

a. Create a County and municipal equipment inventory and establish guidelines for its use (intra- and inter-municipal).

b. Provide opportunities for inter-municipal awareness of and cooperation during emergency and hazard events.

c. Implement mutual aid agreements with specialty groups for hazard events.

Goal 3: Provide for Public Health and Safety

Objectives:

a. Review existing County/Town/Village codes, setbacks, and review processes.

b. Work with utilities and municipalities on methods to reduce power outages using preventative measures.

c. Decrease the time it takes to clear roads and waterways of debris, especially following hazard events.

d. Create an up-to-date inventory of emergency response equipment.

Goal 4: Protect the Environment, Private Property, and Community Facilities

Objectives:

a. Review existing County/Town/Village codes, setbacks, and review processes.

b. Enforce and promote smart development within the County.

c. Work with public water supply and sewer facilities to review security readiness and emergency response plans and – review potential and feasibility for water supply extensions.

e. Evaluate opportunities to decrease flooding problems within the County and decrease property impacts.

f. Maintain critical facilities within Oswego County.

Goal 5: Improve County-wide Communication Systems and Transportation Infrastructure

Objectives:

a. Provide training for emergency response personnel to respond to and handle hazard events.

b. Establish and maintain procedures to notify affected individuals – particularly the elderly and persons with special needs – in the event of an emergency.

c. Improve public communications systems in the County.

d. Identify critical facilities and emergency shelter locations that should have backup power generation capabilities for emergencies.

e. Review and publish response plan protocols.

f. Improve/maintain deficient transportation infrastructure.

7.2 Mitigation Strategy

7.2.1 2012 Hazard Mitigation Plan Implementation

Per requirements in the Disaster Mitigation Act of 2000, a discussion regarding past mitigation activities and an evaluation of such efforts is needed to establish a foundation in developing the goals, objectives, and actions proposed in this Plan. The County has implemented a number of actions that were identified in their 2012 HMP. The County's mitigation actions from their 2012 HMP are listed in Table 7.1 (Appendix A), along with their completion status to date.

Mitigation actions identified by individual jurisdictions for the County's 2012 HMP are included in tables in each jurisdictional annex, along with their statuses and any additional details.

7.2.2 Proposed County Mitigation Actions for HMP Update

Several mitigation actions were proposed by Oswego County in order to reduce the impact of potential hazard events. The implementation of these specific mitigation actions would aid in achieving the goals and objectives listed in Section 7.1. The County mitigation actions fall under the following six broad categories indicated by FEMA 386-3:

- **Prevention** – Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital government programs, open space preservation, and storm water management regulations.

- **Property Protection** – Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness** – Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- **Natural Resource Protection** – Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services** – Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- **Structural Projects** – Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

The County proposed eleven (11) new mitigation actions to be considered for the present HMP update, which are detailed in Table 7.2 (Appendix A). Each participating jurisdiction developed at least two individual mitigation actions that were specific to their needs, which are described in each jurisdictional annex (Appendix B).

7.2.3 Mitigation Action Prioritization

The mitigation actions proposed as part of the hazard mitigation process for Oswego County were submitted by members of the public, County personnel, municipal representatives, and representatives of other participating agencies and groups. General priority measures were instituted in order to prioritize the proposed mitigation actions that are included as part of this plan. It is important to note that the recognized priority levels are based on the current knowledge of the mitigation actions, including their estimated costs, timeframes, and funding availability. Prioritization criteria will be reviewed and revised during the 5-year plan update intervals.

An evaluation tool called 'STAPLEE' was used to review the benefits and costs associated with each mitigation action. The STAPLEE concept employs a technique for identifying, evaluating, and prioritizing mitigation actions based on existing local conditions (FEMA, 2008). This method provides set factors with which to review the feasibility of implementing each proposed

mitigation action. The results of the STAPLEE evaluations were factored into each mitigation action's priority determination, based on the level of benefits that each action provided. Table 7.3 below details the factors incorporated into the STAPLEE evaluation that was completed for each mitigation action. Such an analysis allowed plan participants to weigh the pros and cons of implementing the proposed mitigation actions included in this plan.

Table 7.3 – STAPLEE Evaluation Factors

Evaluation Category		Evaluation Criteria
S	Social	Evaluated in terms of community acceptance. Does the action have social benefits?
T	Technical	Evaluated in terms of feasibility. Will the action help to reduce losses in the long-term with minimal secondary impacts? Does the action act as a partial or complete solution?
A	Administrative	Evaluated based on staffing, funding, and maintenance requirements. Do the participating jurisdictions have the personnel and capabilities to implement the action? Are additional resources required?
P	Political	Evaluated by political leadership and emergency management acceptance. Will the action receive political support?
L	Legal	Evaluated based on legal authority to undertake an action. Which unit of government is likely to undertake the action?
E	Economic	Evaluated according to funding availability and budget constraints. Where will funding for the action come from?
E	Environmental	Evaluated based on impacts to the environment. Would implementation of the action create negative consequences to environmental assets?

In addition, benefit and cost rankings were assigned to proposed mitigation actions and included in the STAPLEE criteria consideration tables as indicated in Table 7.4, below.

Table 7.4 – Benefit and Cost Rankings

	Assessment Levels and Description		
	High	Medium	Low
Benefits	Action is anticipated to have an immediate impact on reduction of losses – both life and property.	A long-term impact on the reduction of loss of life is expected or an immediate impact on loss of property.	It is difficult to assess the benefits of an action due to its long-term timeframe.
Costs	Existing funding sources are inadequate or are not identified to cover implementation of the action.	Funding exists, but will have to be reapportioned or budgeted over multiple years.	Funds to implement action are available in existing budget.

Actions recorded as having a benefit level equal to or higher than the cost level, were viewed as cost-beneficial actions, therefore receiving a high priority ranking. This priority ranking process should be viewed as a preliminary analysis. As the implementation of mitigation strategies is progressed, the ranking system used during this evaluation will evolve based on input from participating jurisdictions, agency representatives, and other branches of state and federal government. Additional funding sources will be required for many of the proposed mitigation actions. Coordination with agencies such as NYS DHSES and FEMA will be necessary to secure funds for proposed mitigation actions, especially those with high costs and long-term implementation schedules.

Once the STAPLEE and cost-benefit evaluations were completed, each action was prioritized. The results of the evaluation process for the County's proposed mitigation actions are detailed in Table 7.5 (Appendix A). Individual mitigation actions proposed by each jurisdiction were also evaluated and prioritized using these methods, and each jurisdiction's STAPLEE table is included in the jurisdictional annexes (Appendix B).

7.2.4 Mitigation and Adaptation Strategy Implementation

The proposed mitigation actions were developed based on a need, as noted by members of the County, working groups, or public. The proposed actions were chosen based on their effectiveness in accomplishing one or more of the goals established as part of this hazard mitigation plan. Once these actions were suggested, they were analyzed to determine their feasibility, cost, and implementation timelines. The specific hazards mitigated, goals and objectives achieved, implementing agency, estimated costs, planning mechanisms, potential funding sources, and implementation timeframes for each action are detailed in Table 7.2 (Appendix A). The approximate costs considered for each mitigation action were determined based on estimated price ranges. The levels for the cost estimates were as follows:

- Low: cost is estimated to be below $10,000.
- Medium: cost is estimated to be between $10,000 and $100,000.
- High: cost is estimated to be over $100,000.

The implementation timeframes provided for each mitigation action are also estimated. The levels for the timeframe estimates for each mitigation action were as follows:

- Short: short-term, completion anticipated within one to two years.
- Moderate: completion anticipated within five years.
- Long: long-term, completion anticipated in greater than five years.

For some mitigation actions the timeframe is presented as a range. This indicates that the action is currently being implemented or should be implemented as soon as possible and that it will continue throughout the life of the current mitigation plan. Often, long-term actions require updates, annual reviews, or extensive coordination and/or implementation that may take longer than five years to complete. Details of mitigation actions for individual jurisdictions are presented in each jurisdictional annex (Appendix B).

8.0 National Flood Insurance Program

Long-term mitigation of potential flood impacts can be best achieved through comprehensive floodplain management regulations and enforcement at a local level. The National Flood Insurance Program (NFIP), regulated by FEMA, aims to reduce the impact of flooding on private and public structures by providing affordable insurance for property owners. The program encourages local jurisdictions to adopt and enforce floodplain management regulations in order to mitigate the potential effects of flooding on new and existing infrastructure (FEMA, 2015).

Communities that participate in the NFIP adopt floodplain ordinances. If an insured structure incurs damage costs that are over 50% of its market value, the owner must comply with the local floodplain regulations when repairing or rebuilding the structure. A structure could be rebuilt at a higher elevation, or it could be acquired and demolished by the municipality or relocated outside of the floodplain. Insured structures that are located within floodplains identified on FEMA's Flood Insurance Rate Maps (FIRMs) may receive payments for structure and content losses if impacted by a flood event.

The NFIP and other flood mitigation actions are important for the protection of public and private property and public safety. Flood mitigation is valuable to communities because it:

- Creates safer environments by reducing loss of life and decreasing property damage;
- Allows individuals to minimize post-flood disaster disruptions and to recover quicker (homes built to NFIP standards generally experience less damage from flood events, and when damage does occur, the flood insurance program protects the homeowner's investment); and
- Lessens the financial impacts on individuals, communities, and other involved parties (FEMA, 2015).

8.1 Oswego County Flood Mapping

FEMA issued updated Flood Insurance Rate Maps (FIRMs) and digital floodplain data for Oswego County in June 2013. All jurisdictions in Oswego County are included in this updated flood mapping, and data are available online at: https://msc.fema.gov/portal.

There are an estimated 107,526 acres of land in the County that are located within mapped 100-year floodplains and 1,048 acres in mapped 500-year floodplains. It is noted that the 100-year floodplain acreage includes the area of Oneida Lake. A 100-year flood indicates a flood elevation that has a 1-percent chance of being equaled or exceeded each year. A 500-year flood indicates a flood elevation that has a 0.2-percent chance of being equaled or exceeded in any given year. The approximate total structure value of parcels in Oswego County is $6.45 billion

(this value was calculated from parcel data by subtracting Land Assessed Value from Total Assessed Value). Approximately 14,793 tax parcels within Oswego County intersect the mapped 100-year floodplain, 8,685 of which are residential and 417 are agricultural. A total of 388 are covered by NFIP policies—2.6% of all properties intersecting the mapped 100-year floodplain.

8.2 Oswego County National Flood Insurance Program (NFIP) Participation

Thirty-one of the 33 jurisdictions in Oswego County participate in the NFIP. Currently, the Town of Palermo and Town of Williamstown do not participate in the NFIP. The Town of Palermo does, however, have a local floodplain ordinance (Local Law No. 5 of 1999). Neither Town experiences significant flooding issues, according to local records. Details regarding NFIP claims and losses for each jurisdiction are presented in the jurisdictional annexes (Appendix B). None of the jurisdictions within Oswego County participate in the Community Rating System (CRS) program. The CRS is a voluntary incentive program that recognizes and encourages floodplain management activities at the community level. As a result of CRS participation, flood insurance premium rates are discounted to reflect the reduced flood risk that results from community actions to meet the three goals of the CRS: reduce flood loss, facilitate accurate insurance ratings, and promote flood insurance awareness (FEMA, 2016).

8.3 NFIP Policy and Loss Statistics and Repetitive Loss Statistics

NFIP policy data and loss statistics (as of July 31, 2018) were obtained from FEMA to determine the extent of participation, flood losses, and active flood insurance policies in Oswego County. Tables 8.1 and 8.2 (Appendix A) summarize the number of flood insurance policies in-force and claims filed to date for each jurisdiction in Oswego County. Jurisdiction-level data is also summarized in each jurisdictional annex (Appendix B).

Table 8.1 summarizes the number of flood insurance policies, coverage amounts, and premium amounts for all jurisdictions in Oswego County as of July 31, 2018. No policy data are available for the Villages of Lacona, Sandy Creek, or Parish, though these communities all participate in the NFIP. No policy data are available for the Towns of Palermo or Williamstown because they do not currently participate in the NFIP. It is noted that while policy data are shown for the Village of Altmar, this Village was dissolved in 2012 and is now part of the Town of Albion. The Town of Schroeppel has the most policies in-force (59), while the Town of West Monroe has the largest insurance amounts in-force ($8,906,800).

Table 8.2 summarizes the number of flood loss claims filed to date in each jurisdiction and payments associated with losses from January 1, 1978 to July 31, 2018. NFIP Loss Statistics indicate that the Village of Cleveland has experienced the most flood losses (33), while the Town of Minetto has sustained the most total damage ($394,973.14) even though it only had three

closed losses. A number of municipalities have not reported any loss claims since this information started to be collected in 1978, including the Towns of Amboy, Boylston, Hannibal, Orwell, Palermo, Redfield, and Williamstown, and the Villages of Hannibal, Lacona, Sandy Creek, and Parish. As mentioned above, The Towns of Palermo and Williamstown do not participate in the NFIP and therefore have no claims data available.

According to FEMA, there are a total of 10 repetitive loss properties in Oswego County as of October 31, 2017 (Table 8.3, Appendix A). Nine of these properties are single-family residential homes and one is a non-residential property. Collectively, these properties have incurred a total of 28 flood losses with total payments of $518,807.84 - an average payment of $18,529 per loss. One of the nine single-family residences is a severe repetitive loss property and has incurred a total of six losses.

9.0 Plan Maintenance

9.1 Plan Monitoring and Evaluation

The three working groups that were established at the beginning of this process will act as a mitigation committee that will be responsible for meeting annually in February to discuss the implementation of the mitigation plan and identify any needed revisions. It is recognized that with increased growth and the passing of time, there may be changes in jurisdiction representatives on the mitigation committee. Any representative changes will be indicated when the plan is revised. This meeting will be planned and facilitated by members of the Oswego County Emergency Management Office. The mitigation committee may also meet to evaluate and revise the County's mitigation plan following a major disaster event. This would allow committee members to determine if the actions recommended in the plan are appropriate or to see if any changes are necessary based on the pattern of disaster damages. The Director of the County's EMO is responsible for approving all proposed additions and updates to the plan.

One month prior to the annual plan review meeting, a reminder will be distributed to each jurisdiction representative. This reminder will engage representatives to think of how risks and hazards have changed within their jurisdiction or at the County level, whether the goals and objectives identified in the plan still address the current concerns of their jurisdiction and the County, and whether the status of any proposed mitigation action has changed or whether additional actions should be included. The implementation of proposed mitigation actions is important to review in order to determine whether the plan is being executed correctly and to the optimal extent. Items that should be reviewed for each mitigation action include the current status of the action, the ultimate cost of the action, the success (if completed action), and the funding sources used for the action.

During the annual plan review meeting between the mitigation committee and the County EMO, each jurisdiction will provide an update to the group of his/her review of the plan and the implementation details for the proposed mitigation actions that apply to their jurisdiction. Notes of the annual meeting will be kept and will include specific details associated with any proposed changes to the plan. During re-approval years (every five years), once revisions are approved by the Director of the Oswego County EMO, the revised plan will be submitted to FEMA for re-approval in accordance with the five year review schedule dictated in DMA 2000.

9.2 Plan Updating

The proposed hazard mitigation plan 5-year review schedule that will be completed as follows:

- Jurisdiction representatives comprising the mitigation committee will meet with Oswego County EMO representatives and other involved individuals on an annual basis to discuss the implementation and specifics of the County mitigation plan. Meeting discussions will be documented, including proposed changes to the plan. An annual update checklist is provided in Appendix G which will be referenced during these meetings. All discussion and proposed changes will be kept in Appendix G.
- When a 5-year update is required, the mitigation committee and County EMO will meet approximately 18 months prior to the plan's expiration date to update and revise all elements of the plan and produce a final revised document.
- This updated plan will be presented to the boards of each participating jurisdiction in order for each jurisdiction to formally concur with and adopt the proposed changes.
- Once all participating jurisdictions have re-adopted the hazard mitigation plan, the revised plan will be submitted to FEMA for re-approval.

9.3 Incorporation into Existing Planning Mechanisms

Elements of the plan will be considered during municipal and County-wide development and comprehensive planning. The approved hazard mitigation plan will also serve as an important resource for developing and/or updating emergency operations plans and procedures throughout Oswego County. The County's HMP update will be incorporated into and referenced by future updates of the plans, policies, ordinances, programs, studies, reports, and staff listed in Table 3.1 (Appendix A). This integration of the HMP into other planning mechanisms will take place at the County level and within each municipality. This table will be updated as additional mechanisms or capabilities are added by the participating jurisdictions. Table 9.1 summarizes how the HMP update will be incorporated into the existing and future planning mechanisms and opportunities at the County and jurisdiction level.

Table 9.1 – Planning Mechanism Incorporation	
Mechanism	**How Plan Will be Incorporated**
Emergency Planning	• Plan will be added/referenced as an Appendix to the County's Comprehensive Emergency Management Plan. • Hazard risk assessment and vulnerability data included in the mitigation plan will be reviewed during emergency planning and Emergency Response/Evacuation Plan updates.
Annual Budget	• Mitigation actions will be considered when setting the annual budgets in participating jurisdictions.
Plans and Programs	• Hazard Mitigation Plan information will be considered by each participating jurisdiction during program and protection updates and revisions. • Programs and plans will be compared to the Hazard Mitigation Plan to ensure that goals and objectives are consistent among all documents.
Grant Applications and other Funding Opportunities	• Data and maps from the HMP will be used as supporting documentation in grant applications. • Mitigation actions included in the Plan will be heavily considered during application submission and fund allocation.
Economic Development	• Hazard vulnerability information will be reviewed and utilized during the siting of local development efforts within participating jurisdictions.
Capital Improvement Planning	• Current and future projects will be reviewed for hazard vulnerability. Hazard resistant construction standards will be incorporated into the design and location of potential projects, as appropriate.

9.4 Adding Participating Jurisdictions

The Town of Minetto, the only non-participating jurisdiction for this HMP update, may be added during 5-year plan updates. Alternatively, the Town may complete all participation criteria at their own expense in order to be added before the next County update.

9.5 Public Involvement

It is the intent of Oswego County to keep the public informed about the hazard mitigation planning efforts, actions, and projects that occur within the County. To accomplish this goal, and in addition to the public involvement already incorporated into the completion and review of this document, the following opportunities for public involvement in this ongoing process will be made available:

- A web link will be provided on Oswego County's website that will include a digital copy of the hazard mitigation plan and a list of upcoming planning activities and plan updates;
- Public announcements of and invitations to annual mitigation committee planning meetings and 5-year mitigation plan update events; and
- Completion of public outreach and mitigation education events throughout the County, especially in higher risk hazard areas.

Public outreach efforts will be documented in future plan updates through the inclusion of samples, copies of notices, flyers, web announcements, and/or meeting minutes. If public response is lacking during subsequent update processes, additional ways to expand participation will be considered. Coordination efforts between the Oswego County Emergency Management

Office and the participating jurisdictions and departments involved in the development of this planning document will continue to keep the plan current and feasible. Public outreach ideas that may be implemented to increase participation include:

- Distribute targeted questionnaires to local civic, community, and non-profit groups to received public feedback;
- Organize topic specific meetings with key individuals and experts to discuss particular concerns and brainstorm solutions; and
- Hold education programs during various community events to disseminate information and engage the public in discussions on mitigation planning and hazard preparation.

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Appendix A

Additional Figures and Tables

Appendix B

Jurisdictional Annexes

Appendix C

Meeting Summary

Appendix D

Sample Adoption Resolution

Appendix E

Public Participation Documentation

Appendix F

Oswego County Hazard-Related Press Releases, 2013-2019 year-to-date

Appendix G

Plan Update Checklist