5. CAPABILITY ASSESSMENT

5.1 UPDATE PROCESS SUMMARY

A capability assessment evaluates the capabilities and resources that are already in place at the municipal, county, state and federal levels to reduce hazard risk and identifies where improvements can be made to increase disaster resistance in a community.

For the 2018 Plan, the 2013 Plan Capability Assessment section was reviewed and information updated as appropriate. Capabilities were categorized under four headings: Planning and Regulatory; Administrative and Technical; Financial; and Education and Outreach. The 2013 Plan did not include the Education and Outreach Capability category. For the 2018 Plan, Lehigh and Northampton counties and all 62 municipalities were surveyed to provide an updated assessment of their mitigation planning capabilities, including a self-assessment of capability for each category. Each municipality and both counties were provided a Capability Assessment Survey, with some revisions as described under each category. Descriptions of the plans and programs in place in the Lehigh Valley, and their relation to hazard mitigation, are included in the 2018 Plan. The 2018 Plan also includes a new survey not included in the 2013 Plan: Compliance with the National Flood Insurance Program. A discussion on the integration of hazard mitigation planning into local plans and programs, including the county comprehensive plan, and incorporation of existing studies, reports and technical information into the hazard mitigation plan have been added to this section.

Primary types of capabilities for reducing long-term vulnerability through mitigation planning:

- Planning and Regulatory
- Administrative and Technical
- Financial
- Education and Outreach
5.2 CAPABILITY ASSESSMENT FINDINGS

5.2.1 Planning and Regulatory

While municipalities in Pennsylvania must comply with the minimum regulatory requirements established under the Pennsylvania Municipalities Planning Code (MPC)—Act 247 of 1968, as reauthorized and amended—they otherwise have considerable latitude in adopting ordinances, policies and programs that can support their ability to manage natural and non-natural hazard risk. Specifically, municipalities can manage these risks through comprehensive land use planning, zoning ordinances, subdivision and land development ordinances, hazard-specific ordinances (e.g., floodplain management, sinkholes, steep slopes), and building codes. For the 2018 Plan, the sample planning and regulatory capability survey, as provided in the Pennsylvania Standard Operating Guide, was revised to request whether the jurisdiction’s response for each capability category represented a change since the 2013 Plan, if the 2013 Plan findings have been incorporated into the regulatory tool or program, and how the tool or program can be expanded or improved to reduce risk. Several municipalities identified adoption of new plans and ordinances since the 2013 Plan.

Municipal and county responses to the survey can be found in their municipal annexes. It is noted that both counties, and many of the municipalities, have identified specific mitigation initiatives in the 2018 Plan to help build and enhance mitigation-related planning and regulatory capabilities in the Lehigh Valley. The planning and regulatory capabilities of each municipality is shown in Table 5.2.1.1.
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Comprehensive Plan

Comprehensive plans promote sound land use and regional cooperation among local governments to address planning issues. A comprehensive plan is a policy document that states objectives and guides the future growth and physical development of a municipality. With regard to hazard mitigation planning, the MPC requires comprehensive plans to include a plan for land use, which, among other provisions, suggests that the plan give consideration to floodplains and other areas of special hazards. The MPC also requires comprehensive plans to include a plan for community facilities and services, and recommends giving consideration to storm drainage and floodplain management.

Pennsylvania’s MPC requires counties to prepare and maintain a county comprehensive plan and to update it every ten years. While county governments are required by law to adopt a comprehensive plan, local municipalities (or groups of municipalities) may do so at their option. In the Lehigh Valley, only the boroughs of Glendon, North Catasauqua and West Easton have not adopted their own plans. However, West Easton indicated a comprehensive plan is under development. As is the case in the Lehigh Valley, counties may opt to have the comprehensive planning done on a multi-county, regional basis. Planning on the regional level allows for the coordination and cooperation of 62 municipalities, which translates to shared objectives and actions among all entities.

Lehigh and Northampton counties adopted a regional comprehensive plan in June 2005 titled Comprehensive Plan The Lehigh Valley…2030, which was prepared by the LVPC. The regional comprehensive plan is the official and legal strategy guiding the growth, development, redevelopment and preservation of the assets of the Lehigh Valley, including streams and floodplains, riparian buffers, wetlands, important natural areas, steep slopes and woodlands. The county plan recommends that new growth not be located in areas recommended for natural resource or farmland preservation. Higher density residential growth and industrial and business expansion should occur in the recommended urban areas. Areas recommended for rural development should be planned for low density and low intensity uses. The regional comprehensive plan is inextricably tied to the Long-Range Transportation Plan and the Transportation Improvement Program, guiding public funding for infrastructure projects that are supportive of land use goals and recommendations. Many of these improvements are in line with the hazard mitigation actions in this plan. The goals in all of these plans reinforce the stated goals in this Hazard Mitigation Plan. Consistent reinforcement of good planning policy demonstrates a region that is unified in its broader goal of protecting the public health, safety and welfare. The Lehigh Valley has a variety of plans that address many mitigation strategies for a number of hazards, however, there is an opportunity to continue to expand actionable items.
FutureLV, an update to the regional comprehensive plan is underway at the time of this 2018 Plan. A major aspect of the Comprehensive Plan update is the integration with the MoveLV Long-Range Transportation Plan. A variety of additional studies and plans have been prepared by the Lehigh Valley Planning Commission that will influence the Comprehensive Plan update:

- **One Lehigh Valley (2014)** – Planning for the region’s continued success, stability and resiliency, a 14-member regional alliance, the Lehigh Valley Sustainability Consortium, embarked on a nearly three-year effort to plan for a sustainable Lehigh Valley. The Consortium partners, including the LVPC, organized ten plans and projects around four themes: Economy, Environment, Transportation and Livable Communities. The LVPC assessed each of the Consortium partner’s plans and projects and assembled a series of 31 goals intended to serve as an update to the regional comprehensive plan.

- **Climate and Energy Element (2014)** – The Climate and Energy Element was created as part of the One Lehigh Valley planning effort. The report identifies goals, policies and strategies to incorporate into the regional comprehensive plan update, including those to lessen the impacts of hazards. Public participation was an important component of preparing the report, with climate change and energy issues being the subject of public meetings June 19, 2014 in Easton, and June 26 and July 17, 2014 at the LVPC offices.

- **One Water (County Planning Directors Association of Pennsylvania 2016)** – The Pennsylvania MPC stipulates that comprehensive plans shall include a plan for the reliable supply of water, considering current and future water resources availability, uses and limitations, including provisions necessary to protect water supply sources. The County Planning Directors Association of Pennsylvania formed a task force to expand the understanding and implementation of Integrated Water Resources Management as a method for Pennsylvania counties and local governments to better address complex water resources and land planning issues. The Task Force reviewed an extensive body of information available from across the Commonwealth and the nation and prepared recommended actions to expand the implementation of Integrated Water Resources Management in Pennsylvania.

- **County Open Space Plans** – The LVPC, on behalf of Lehigh and Northampton counties, created open space plans for the two counties—Livable Landscapes An Open Space Plan for Northampton County (2016) and Livable Landscapes A Park, Recreation, Open Space, Agricultural and Historic Lands Plan for Lehigh County (2018). The LVPC will comment on open space issues identified in these plans during project reviews.

- **Lehigh Valley Return on Environment (2014)** – Prepared by the LVPC and the Wildlands Conservancy, this study identified a key trend—people’s attachment to where they live and their quality of life positively impacts economic development. This study quantified the economic value of the benefits provided by open space and measured its impacts across four areas: Natural System Services ($355.5 million annual benefit), Air Quality ($54 million annual benefit),
Outdoor Recreation ($795.7 million annual benefit) and Property Value ($1.8 billion total real estate premium attributed to living within ¼ mile of protected open space). Each of these areas generate the “natural capital” or economic value from the flow of goods and services supported by natural resources.

- **Lehigh Valley Greenways Plan (2007)** – A greenway is defined as a corridor of open space that may vary greatly in scale from narrow strips of green that run through urban, suburban and rural areas to wider corridors that incorporate diverse natural, cultural and scenic features. Greenways are a critical component of any landscape—protecting the environment, providing alternate routes of transportation, supplying recreational opportunities, and connecting natural and cultural areas to one another, thus providing a linear resource for a variety of users. Connectivity is the defining characteristic that distinguishes greenways from isolated paths and pockets of open space. While individual parks, preserved lands, undisturbed natural areas and waterways are valuable resources, their conservation and recreational value is magnified when they are linked together.

- **Natural Resources Plan** – This plan is a component of the regional comprehensive plan and identifies conservation priority areas based on steep slopes, stream quality, floodplains, wetlands, hydric soils, woodlands and important natural areas (identified in the Natural Heritage Inventory). The map shows areas considered very high, high and medium conservation priority. Very high priority areas are based on areas with the greatest combination of important natural resources. These areas should be given first consideration for public and private conservation acquisition or easement programs.

- **Natural Heritage Inventory** – The LVPC contracted with the Western Pennsylvania Conservancy (Pennsylvania Natural Heritage Program) to complete a study titled *Natural Heritage Inventory of Lehigh and Northampton Counties Update 2013*. This document updated the 2005 report (the original study was completed in 1999) and identifies the plant and animal species of concern and outstanding natural communities in the Lehigh Valley. The region’s National Heritage Inventory is shown in Figure 5.2.1.1.
Figure 5.2.1.1 Natural Heritage Inventory

Source: Pennsylvania Natural Heritage Program, 2013
Guides/Model Regulations

- **Floodplain Guide/Model Regulation (2014)** – The LVPC released an updated floodplain model regulation in March 2014. The guide and model regulation was funded in part by a grant from the Pennsylvania Department of Conservation and Natural Resources through the Delaware and Lehigh National Heritage Corridor. The new model regulation was in advance of Northampton County communities receiving new Flood Insurance Rate Maps (FIRMs) in July 2014, requiring each community to update their floodplain management ordinances. The current model regulation was written using the policies of the 2005 Regional Comprehensive Plan, the 2013 Regional Hazard Mitigation Plan, the updated 2012 DCED floodplain provisions and the 2013 NFIP Community Rating System Coordinator’s Manual as guides.

- **Riparian and Wetland Buffers Guide/Model Regulation (2011)** - The US Environmental Protection Agency estimates that more than half of all stream pollution comes from land runoff, which can contain pollutants such as sediment, oil, fertilizers and pesticides. Increasing the amount of pavement in a watershed, or changing land use from forests to fields, can increase discharge to streams since both of these greatly reduce land permeability and soil storage. Streams in the Lehigh Valley are under pressure from the combined effects of farming uses and continued urbanization. Riparian buffers are a natural, effective means of protecting watercourses. The Commonwealth’s Constitution, and more specifically the MPC, clearly authorizes local municipalities to adopt riparian buffer regulations.

- **Woodlands Guide/Model Regulation (2009)** - Two regulatory approaches to protect woodlands are to adopt tree protection requirements for new development and regulate the timber harvest on private property. Tree protection can include replacement of trees removed from a development site if the tree removed meets the size threshold and that it be replaced by a native tree with the same estimated maximum height and growth rate of the tree to be removed. Another technique is to protect tree roots in the area of land disturbance and establish a “tree protection zone” during construction around these trees. A timber harvest or forestry regulation does not prevent harvesting, but rather defines best management practices to apply during harvesting.

- **Steep Slopes Guide/Model Regulation (2008)** – This model regulation is designed as a section in a zoning ordinance. Applicants proposing development on steep slopes are required to obtain a conditional use permit. This process was chosen because it allows the governing body—not the zoning hearing board—the opportunity to thoroughly examine the proposal and impose any reasonable safeguards to protect the public’s general welfare. The model regulation is constructed as an overlay district, to apply a common set of standards to a designated area that may cut across several underlying zoning districts.

- **Conservation Subdivisions Model Ordinance (2015)** – Conservation subdivisions are residential developments in which a significant portion of the overall acreage of a property is set aside as undivided, permanently protected open space, while houses are clustered on the remainder of the property. The guide provides benefits and drawbacks of the approach,
and an annotated model regulation and example worksheets for municipalities to use in writing their own regulations.

In addition to these efforts, the LVPC held a number of strategy labs during 2017 to obtain public input on a variety of topics that will influence the development of the comprehensive plan update, including agriculture, community facilities, community utilities, economy, education and training, energy conservation and climate change, environment, hazard mitigation and resiliency, land use, parks and recreation, public health, transportation, water, and urban design and historic preservation.

**Capital Improvement Plan**

A capital improvement plan is a multiyear policy guide that identifies needed capital projects and is used to coordinate the financing and timing of public improvements. Capital improvements relate to streets, stormwater systems, water distribution, sewage treatment and other major public facilities. A capital improvement plan should be prepared by the respective county or municipal governments and should include a budget with identified priorities.

Both counties and about 26% of the municipalities that responded to the planning and regulatory capability survey, have capital improvement plans. An additional 11% indicated that a plan was under development.

**Economic Development Plan**

An economic development plan serves as a road map for economic development decision making, based on the collection of statistical data, historical perspective and human potential. The plan: 1) defines realistic goals and objectives, 2) establishes a defined time frame to implement goals and objectives, 3) communicates those goals and objectives to the organization’s constituents, 4) ensures effective use of the organization’s resources; 5) provides a baseline from which progress can be measured and 6) builds consensus around future goals and objectives. About 10% of responding municipalities indicated they have an economic development plan.

**Continuity of Operations Plan**

Continuity of operations planning is the process of developing advanced arrangements and procedures that enable an organization to continue its essential functions, despite events that threaten to disrupt them. The continuity discipline aims to identify emergency or unconventional means to replace or work around those deficiencies in the short term until the organization can be reconstituted on a normal basis. About 26% of responding municipalities indicated they have a continuity of operations plan.

**Open Space Management Plan (Parks and Recreation or Greenways Plans)**

An open space management plan is designed to preserve, protect and restore largely undeveloped lands in their natural state, and to expand or connect areas in the public domain such as parks, greenways and other outdoor recreation areas. In many instances open space management practices are consistent with the goals of reducing hazard losses, such as the preservation of wetlands or other flood-prone areas in their natural state in perpetuity. About 67% of responding municipalities indicated they have open space plans.
Natural Resource Protection Plan

Natural resource protection plans are designed to protect woodlands, steep slopes, waterways, floodplains and wetlands by prohibiting or severely limiting development in these areas. Emergency managers and community planners have been made more aware of the benefits of protecting these areas as mitigation measures over the last few decades. About 31% of municipalities in the Lehigh Valley indicated that they have a natural resource protection plan, however, many preserve natural resources through development restrictions in zoning or subdivision and land development regulations.

Transportation Plan

A transportation plan plays a fundamental role in a state, region, or community’s vision for its future. It includes: 1) a comprehensive consideration of possible strategies; 2) an evaluation process that encompasses diverse viewpoints; 3) the collaborative participation of relevant transportation-related agencies and organizations; and 4) open, timely, and meaningful public involvement. Creating such a plan is a cooperative process designed to foster involvement by all users of the system, such as businesses, community groups, environmental organizations, the traveling public, freight operators, and the general public, through a proactive public participation process. This collaborative effort helps to better allocate resources for infrastructure improvements and provide efficient routes for both people and materials in the event of a disaster. About 23% of the municipalities that responded to the survey indicated that they have a transportation plan.

MoveLV Long Range Transportation Plan (2015-2040), prepared by the LVPC, covers both Lehigh and Northampton counties and is the $2.5 billion transportation investment strategy for the Lehigh Valley. The Long Range Transportation Plan considers the improvement of the region’s roads, highways, bridges, transit system, sidewalks and trail networks. The Long Range Plan is updated every four years, is federally mandated and helps guide the transportation decision-making process through policy and investment decisions. The Long Range Plan includes a goal of constructing transportation improvements that are compatible with the built and natural environment, as well as providing a safe, well-maintained road network that facilitates the movement of traffic. These goals are compatible with the goals in the 2018 Hazard Mitigation Plan. The foundational policy of maintaining existing infrastructure before creating new infrastructure helps to ensure that the transportation network will be able to perform in the event of an emergency. This also allows for redundancy in the road network, providing first responders a multitude of routes when responding.

Historic Preservation Plan

This type of plan describes how the community will preserve the historic structures and areas within it. Since these structures pre-date building codes and modern community planning requirements, many of them are especially vulnerable to a variety of hazards. A historic preservation plan may include measures to retrofit or relocate historic treasures out of hazard impact areas. About 21% of the municipalities that responded to the survey indicated that they have a historic preservation plan. Four municipalities have indicated a plan is under development.
Farmland Preservation

Farmland preservation measures are important to hazard mitigation. Farms and forest land are important for recharging the community’s aquifer and providing habitat for local wildlife. In addition, farmland reduces or eliminates future hazard vulnerability by maintaining the land as open space. As of July 2018, Lehigh County and Northampton County have 23,471 and 15,734 acres of preserved farmland, respectively.

Evacuation Plan

Evacuation is one of the most widely used methods of protecting the public from hazard impacts. The easiest way to minimize death and injury due to a hazard event is to remove as many people as possible from its path. Evacuation plans include descriptions of the area(s) being evacuated, the demographics and characteristics of people within those area(s), transportation routes to safe areas, and how the community will support those individuals who do not have access to their own transportation. Such plans address various evacuation situations, such as evacuation plans for dam safety, hazardous material spills and radiation releases. About 38% of the municipalities that responded to the survey have an evacuation plan. Six municipalities have a plan under development.

Disaster Recovery Plan

A Disaster Recovery Plan is a comprehensive set of measures and procedures that ensure essential resources and infrastructure are maintained or backed up by alternatives during various stages of a disaster. It is another step to ensure the preparedness and ability to respond quickly and effectively to restore the community’s essential services. The plan addresses the public sector’s responsibilities, including temporary shelter, refuse disposal, overall damage assessment, restoration of utility services, reconstruction priorities, financial assistance, as well as dealing with emergency demands. About 31% of the municipalities that responded to the survey indicated that they have a disaster recovery plan. Seven have a plan under development.

Subdivision and Land Development Ordinance

Subdivision and land development ordinances (SALDOs) are intended to regulate the development of housing, commercial, industrial, or other uses, including associated public infrastructure. Within these ordinances, the criteria on how land will be divided, the placement and size of roads and the location of infrastructure can reduce exposure of development to hazard events.

All municipalities in the Lehigh Valley, with the exception of Slatington Borough in Lehigh County and the boroughs of West Easton, Glendon and Chapman in Northampton County, have subdivision and land development regulations. Both Lehigh and Northampton counties have a subdivision and land development ordinance, which covers these four municipalities. The LVPC, on behalf of the counties, has the authority to enforce the county regulations in these communities per the Pennsylvania MPC.

Zoning Ordinance

Zoning ordinances allow for local communities to regulate the use of land to protect the interests and safety of the general public. Zoning ordinances can be designed to address unique conditions or concerns within a given...
community. They may be used to create buffers between structures and high-risk areas, limit the type or density of development, and/or require land development to consider specific hazard vulnerabilities. All municipalities in the Lehigh Valley, except the Borough of Chapman, have zoning regulations. Neither county has a zoning ordinance.

**Building Code**

Building codes regulate construction standards for new construction and substantially renovated buildings. Standards can be adopted that require resistant or resilient building design practices to address hazard impacts common to a given community. In 2003, the Commonwealth of Pennsylvania implemented Act 45 of 1999, the Uniform Construction Code (UCC), a comprehensive building code that establishes minimum regulations for most new construction, including additions and renovations to existing structures. Effective December 2009, the Commonwealth adopted regulations of the 2009 International Code Council's codes. Since all municipalities in the Lehigh Valley are required to abide by the UCC, they are required to enforce the 2009 building code regulations.

**Fire Code**

Fire codes relate to both the construction and use of structures in terms of preventing fires from starting and minimizing their spread, and minimizing the injuries and deaths caused by a fire within a building. They govern such things as the following: 1) building materials that may be used; 2) the presence and number/type of fire extinguishers; 3) means of egress; and 4) hazardous materials storage and use. About 70% of municipalities responding to the survey indicated that their community had a fire code in place.

**Stormwater Management Plan/Ordinance**

The proper management of stormwater runoff can improve conditions and decrease the chance of flooding. The Pennsylvania legislature enacted the Stormwater Management Act (Act 167 of 1978), commonly called Act 167, requiring counties to develop stormwater management plans for all watersheds. This planning effort results in sound engineering standards and criteria being incorporated into local codes and ordinances to manage stormwater runoff from new development and redevelopment in a coordinated, watershed-wide approach.

Act 167 Stormwater Management Plans are intended to improve stormwater management practices and mitigate potential negative impacts from future development or redevelopment. It is not the intent of the plans to solve existing flooding or runoff problems, but to identify them for future correction and assure that problems do not get worse. The plan does allow municipalities to establish a capital improvement program to correct storm drainage issues. Since flooding is the most significant natural hazard affecting the Lehigh Valley, the hazard mitigation plan provides a thorough understanding of the current capabilities to manage stormwater and a clear action plan to mitigate future impacts.

The LVPC provides an advisory engineering review of the stormwater aspects of subdivision and land development proposals to assist in creating consistent implementation throughout each watershed. The municipalities have the authority to enforce the ordinance provisions. Within Lehigh and Northampton counties, the LVPC prepares plans on behalf of both counties. The state designated 16 Act 167 study areas within the region, and the plans
were approved by the Pennsylvania Department of Environmental Protection (PADEP) between 1988 and 2010, with updates to the Little Lehigh Creek Plan in 1999 and 2005. A Monocacy Creek Act 167 Plan update has been prepared and adopted by both counties and approved by the PADEP in May 2018. The model ordinance must be adopted by all watershed municipalities by November 21, 2018. All 62 municipalities have adopted Act 167 ordinances for their watersheds. Act 167 planning for the Tohickon Creek Watershed, including portions in the Lehigh Valley, was completed by Bucks County.

Until 2004, stormwater planning dealt solely with runoff quantity and not quality. To comply with requirements of the National Pollutant Discharge Elimination System (NPDES) regulations from the Environmental Protection Agency, 59 of the 62 municipalities in the Lehigh Valley must adopt and implement an ordinance to reduce or prevent the discharge of pollutants into receiving waters. All Act 167 plans have been prepared or updated to include water quality provisions. The region’s stormwater watershed designations are shown in Figure 5.2.1.2.

In addition to the Act 167 stormwater management plans in place, other related planning efforts include:

**Recommended Procedures for Act 167 Drainage Plan Design (LVPC 2006)** – This document provides a step-by-step process for creating a drainage design to meet Act 167 Ordinance requirements.

**Technical Best Management Practice Manual & Infiltration Feasibility Report: Infiltration of Stormwater in Areas Underlain by Carbonate Bedrock within the Little Lehigh Creek Watershed (LVPC 2002)** – The intent of this Best Management Practice design manual is to provide guidance for stormwater management systems to be developed in the rapidly developing Little Lehigh Creek Watershed. The manual was developed under the Act 167 Stormwater Management Program as administered by the Department of Environmental Protection and implemented by the LVPC.

**National Flood Insurance Program Participation (Floodplain Management Plan/Floodplain Regulations)**

When the US Congress passed the National Flood Insurance Act of 1968, it created the National Flood Insurance Program (NFIP). The program enables property owners in participating communities to purchase insurance as a protection against flood losses, in exchange for state and community floodplain management regulations that reduce future flood damages. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction and substantial improvements in floodplains, the federal government will make flood insurance available within the community as financial protection against flood losses.
Figure 5.2.1.2 Stormwater Management Plans PA Act 167

Watershed Designations
1. Little Lehigh Creek
2. Jordan Creek
3. Coplay Creek
4. Trout/Bertsch Creeks
5. Maiden Creek Headwaters
6. Perkiomen Creek Headwaters
7. Saucon Creek
8. Hokendauqua Creek
9. Nancy Run
10. Monocacy Creek
11. Catasauqua Creek and Adjacent Watersheds
12. Bushkill Creek
13. Martins/Jacoby Creeks
14. Fry's Run and Adjacent Watersheds
15. Sacony Creek Headwaters
16. Tohickon Creek/Delaware River (North)

Status of Plan

- **Orange** Original Water Quality Plan and 2006 Water Quality Update, 2018 Update
- **Gray** Original Water Quantity Plan and 2006 Water Quality Update
- **Green** Original Water Quantity Plans (2) and 2004 Water Quality Update
- **Dark Green** New Water Quantity/Quality Plan
- **White** Watersheds

*Original Plan prepared by Berks County
**Original Plan prepared by Bucks County

Sources: Pennsylvania Department of Environmental Protection, Lehigh Valley Planning Commission, 2000
In addition, the Pennsylvania Floodplain Management Act (Act 166 of 1978) mandates municipal participation in and compliance with the NFIP. It also establishes higher regulatory standards for new or substantially improved structures that are used for the production or storage of dangerous materials by prohibiting them in the floodway. Additionally, Act 166 establishes the requirement that a Special Permit be obtained prior to any construction or expansion of any manufactured home park, hospital, nursing home, jail and prison if the structure is located within a special flood hazard area. The Pennsylvania Department of Community and Economic Development (DCED) provides communities with a suggested ordinance document to assist municipalities in meeting the minimum requirements of the NFIP along with Act 166. The model ordinance contains provisions for municipal consideration that are more restrictive than state and federal requirements.

Through administration of floodplain ordinances, municipalities can ensure that all new construction or substantial improvements to existing structures in the 1% annual chance floodplain are engineered to minimize the impact of flooding and are better able to withstand the forces of a flood event.

All municipalities in the Lehigh Valley participate in the NFIP. All municipalities have adopted a Floodplain Ordinance and are required to update the ordinance whenever the regulatory NFIP flood mapping is officially updated. Since the 2013 Plan, all Northampton County municipalities adopted a floodplain ordinance to reflect the FEMA floodplain mapping for the county that went into effect on July 16, 2014. FEMA is in the process of developing new flood mapping for the Lehigh River Watershed, with preliminary mapping anticipated to be available in September 2019. Once the map update process has been formally completed, each community in the watershed will have to update their ordinance. NFIP-participating communities are required to make current regulatory NFIP mapping available to their residents for review and provide mapping assistance. Typically, this mapping is available at the municipal offices in each community. About 44% of municipalities that responded to the survey indicated that, in addition to paper maps, they also have digital mapping available. Six municipalities indicated that their floodplain ordinance exceeds the minimum requirements, including regulating properties in the 500-year floodplain and requiring a 1.5 foot freeboard above the 100-year base flood elevation. 26% of municipalities that responded have a certified floodplain administrator. Based on review of the 62 municipal responses to the NFIP survey, only a few documented a high level of NFIP capability, and about half documented a moderate level of capability. Therefore, almost all municipalities would appear to benefit from NFIP training and education. To that end, the county annex includes several actions related to supporting and facilitating NFIP training and education programs for county and municipal personnel and the public.

The National Flood Insurance Program’s Community Rating System (CRS) was established in 1990 to encourage local governments to increase their standards for floodplain development. The goal of this program is to encourage communities, through flood insurance rate adjustments, to implement standards above and beyond the minimum requirements.

The CRS is a voluntary program designed to reward participating communities for their efforts to create more disaster-resistant communities using the principles of sustainable development and management. By enrolling in the program, municipalities can leverage greater flood
protection while receiving flood insurance discounts, ranging from 5% up to 45%.

Currently within the Lehigh Valley, no municipalities participate in the CRS program. Increased participation in the Lehigh Valley will be supported by both counties as identified in their updated mitigation actions. Further, certain communities in the Lehigh Valley have identified in their updated mitigation actions that they plan to apply to the CRS program.

Flood hazard risk management in the Lehigh Valley is supported by the LVPC through the Act 167 Stormwater Management Planning program, as detailed and referenced within this Plan. The region’s National Flood Insurance Program Compliance is shown in Table 5.2.1.2.

**Emergency Operations Plan/Emergency Management Services**

The Pennsylvania Emergency Management Services Code, Title 35, requires all political jurisdictions in the Commonwealth to have an Emergency Operations Plan (EOP), an Emergency Management Coordinator (EMC), and an Emergency Operations Center (EOC). All 62 municipalities and both counties comply with the code.

The Lehigh Valley is supported by strong regional and county-level emergency management capabilities provided by the Lehigh County Emergency Management Agency and Northampton County Emergency Management Services. Both Lehigh and Northampton counties continue to operate emergency 9-1-1 call centers and Emergency Operations Centers (EOCs) during emergencies in their counties. In addition, both counties continue to provide or support emergency service programs and measures, including emergency response, public alert and warning systems, emergency communications systems, hazard event monitoring systems, and public information and outreach programs.

**9-1-1 Centers**

9-1-1 is the telephone number used to report emergencies, wherein there is the presence or potential for an immediate threat to life or property, and response is needed by police, fire, or emergency medical service agencies. Examples include a crime which has just occurred or in-progress, odor or presence of fire, a sick or injured person requiring pre-hospital treatment and transportation to a hospital emergency department. The 9-1-1 System maintains the capability to accept calls from hearing or speech impaired callers utilizing a Telecommunications Device for the Deaf (TDD). Currently, each county operates a 9-1-1 Public Safety Answering Point (PSAP), as do the cities of Allentown and Bethlehem. These four PSAPs need to coordinate efforts during a regional hazard event until 2019. The consolidation of the Allentown and Lehigh County PSAPs and Bethlehem and Northampton County PSAPs must be completed in accordance to Act 12 by June 30, 2019. Opportunities are being taken to share 9-1-1 infrastructure between the two counties.

**Emergency Operations Centers (EOC)**

In the event of an emergency or disaster, both Lehigh and Northampton counties could activate their EOCs. The purpose of the EOC is to coordinate the response and distribution of resources to a disaster incident. Highly experienced and trained personnel staff the EOC when in operation. The EOC utilizes the expertise in the following disciplines to staff the following 15 Emergency Support Functions: Transportation, Firefighting, Public
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<th>Initial Entrance into NFIP</th>
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<th>Effective Date of Flood Insurance Rate Maps</th>
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Safety, Communications/Radio Amateur Civil Emergency Services, Public Works, Emergency Management, Mass Care, Resource Support, Public Health and Medical Services, Urban Search and Rescue, HazMat, Energy, Public Information, Long-Term Recovery and Agriculture. Northampton County EOC has an additional function: Volunteer and Donations Management. When activated, the EOCs will maintain constant communications with the 9-1-1 centers and PEMA to ensure coordination of activities. Local EOCs could also be activated to coordinate the response and distribution of resources at the local level.

The Lehigh and Northampton County Emergency Management Agency (EMA) capabilities fall under two categories: Emergency Service Measures and Public Information Programs, which are provided in the Education and Outreach Capability section.

Emergency Service Measures

Emergency service measures protect people during and immediately following a disaster.

- **Alert Warning System** – Emergency Alert System (EAS) – Lehigh County operates as an EAS initiating station, covering Lehigh and Northampton counties. The EAS is an alert system for disseminating emergency information and warnings to the general public within the counties, utilizing the resources of the Broadcast and Cable Industries. The EAS allows state and local officials to quickly send out important area specific state and local information. The EAS has the capability of providing alerts in the language normally used by the station or cable system, such as the Spanish language.

- **Monitoring Systems** – The counties and municipalities have several systems they can monitor that will disseminate emergency information and warnings. These systems include: SEVAN, Knowledge Center, Radio Amateur Civil Emergency Services, CodeRED, NOAA Weather Radios and 800 MHz Statewide Radio.

  - **SEVAN (Satellite Emergency Voice Alerting Network)** – The voice side of the satellite warning system allows PEMA, counties, regional offices and cities to communicate directly in real time regardless of the status of the telephone system. Warning messages are routinely broadcast by PEMA using the system.

  - **Knowledge Center** – Knowledge Center is a web-based, interactive incident management tool used by the Northeast Pennsylvania Regional Counterterrorism Task Force (NEPARCTTF), which includes, Lehigh and Northampton counties. Knowledge Center provides emergency managers with the ability to gather large quantities of information related to incidents and coordinate that information for both small-scale and large-scale events. Small-scale events involve one or two responder agencies, and large-scale events involve complex, multi-jurisdictional responses comprised of hundreds of agencies from the local, state, and federal government, non-governmental organizations, and the private sector. The system allows for seamless communication with neighboring jurisdictions, counties and the state about the types of incidents and emergencies that may occur in the region.

  - **RACES (Radio Amateur Civil Emergency Services)** – A group of amateur radio operators
who donate their services in time of natural disaster or emergency. They provide communication to fire, police and other agencies that need assistance.

- **Onsolve/CodeRED** – The system is used to send out emergency information, ranging from evacuation notices, AMBER Alerts, inclement weather, active shooter and other disaster response efforts to the residents of Lehigh and Northampton counties. The Emergency Alert System is a service brought to the area through the Northeast Pennsylvania Regional Counterterrorism Task Force.

- **NOAA Weather Radio All Hazards (NWR)** – A nationwide network of radio stations broadcasting continuous weather information directly from a nearby National Weather Service office. NWR broadcasts National Weather Service warnings, watches, forecasts and other hazard information 24 hours a day. NWR also broadcasts warning and post-event information for all types of hazards, including natural and non-natural (such as chemical releases or oil spills), and public safety (such as AMBER Alerts or 9-1-1 Telephone outages).

- **800 MHz Statewide Radio System** – This system provides two-way voice and data communications for all county and state agencies. The primary function of this system is to provide redundant communications between the county and the partner agency facilities in the event that the primary means of communication becomes interrupted. This system is integrated with the Northampton County Communication/9-1-1 center. The municipalities may also be equipped with RACES, NWR and Knowledge Center systems to monitor emergency information and warnings.

### Emergency Response Planning

- **Emergency Operations Plan (EOP)** - Lehigh and Northampton counties have prepared EOPs to document the counties’ specific emergency response procedures during various emergency events. Emergency Operations Centers and other activities are guided by this plan.

- **Mutual Aid Agreements** – Lehigh and Northampton counties have formal agreements in place with each other and with the Pennsylvania counties contiguous to each as a result of the PA Intrastate Mutual Assistance Program (Act 93). All municipalities in Lehigh and Northampton counties are participants in this program.

The counties also assist in planning for:

- Lehigh Valley International Airport
- Lehigh and Northampton County Prisons
- County and Local (Municipal) Emergency Operations Plans
- Medical Facilities: Hospitals; Ambulatory Surgical Centers; Hospices; Psychiatric Residential Treatment Facilities; All-Inclusive Care for the Elderly; Transplant Centers; Long-Term Care Facilities; Intermediate Care Facilities for Individuals with Intellectual Disabilities; Home Health Agencies; Comprehensive Outpatient Facilities; Critical Access Hospitals; Clinics, Rehabilitation Agencies, and Public Health Agencies as Providers of Outpatient Physical Therapy and Speech-Language Pathology
Services; Community Mental Health Centers, Rural Health Clinics and Federally Qualified Health Centers; End-Stage Renal Disease Facilities

- Dams
- Mass Casualty/Fatality Management Plans
- Counterterrorism Preparedness
- Limerick Nuclear Power Station Evacuation and Sheltering/Radiological Ingestion and Response Plan
- Special Events Plans
- School District Plans
- Day Care, Group Homes, Personal Care and Special Needs Facility Plans
- SARA (Superfund Amendments and Reauthorization Act of 1986) facilities
- Commodity Flow Studies
- Preparedness, Prevention and Contingency (PPC) Plans
- Above-Ground Storage Tank Plans
- Rail Transportation Plans
- Pipeline Emergency Response Plans
- E-Cycling Plans
- High Hazard Dam Plans
- Water Treatment Emergency Response Plans
- Wastewater Treatment Emergency Response Plans
- Electric Generation Emergency Response Plans
- Influenza Pandemic and Points-of-Dispensing Plans – Department of Health
- Cedarbrook (Lehigh) and Gracedale (Northampton) Emergency Action Plans
- Continuity of Operations (COOP)/Continuity of Government (COG) Plans
- Historic Preservation Plans
- County Building Emergency Action Plans
- Volunteer/Donations Management Plans
- Incident Action Plans
- Mine Emergency Response Plan (Northampton County)

Each municipality is responsible to provide emergency response within their municipality in Emergency Medical Services (EMS), Fire and Police. If a municipality does not have one of these providers in their community, they have a contract with an adjacent political subdivision to provide services. If resources are exhausted, the services are provided through the mutual aid agreements.

**In Lehigh County there are:** 8 EMS Agencies, 44 Fire Companies, 13 Municipal Police Departments, 2 State Police Barracks, City of Allentown 9-1-1, City of Bethlehem 9-1-1. **In Northampton County there are:** 12 EMS Agencies, 38 Fire Agencies, 2 Rescue Agencies, 26 Municipal Police Agencies, 4 School District Police Agencies, 3 College Campus Police Agencies, 2 State Police Barracks, City of Bethlehem 9-1-1.
Evacuation Planning

**Lehigh County** has developed an evacuation plan for the county that addresses the following basic scenarios:

- Evacuation of a large population or geographic area within the regional task force.
- Mass exodus of population from another area entering the county.
- How would the county or could the county act as host for a large influx of evacuees?

**Northampton County** will follow the actions set forth in the county’s emergency operations plan. For interstate evacuations, Northampton County will follow the state (PEMA) and federal (FEMA) guidelines set forth. Northampton County follows federal and state guidance in developing a comprehensive evacuation plan at the county level to include the principles and methods of evacuation and re-entry planning and operations.

Shelter Planning

The counties, in cooperation with the American Red Cross of the Greater Lehigh Valley, have designated shelters set up throughout the counties. These shelters may be used during times of emergency and disasters.

While the risk of certain hazards can be addressed partially through mitigation, the risks of other hazards (particularly certain non-natural hazards) are primarily managed through the preparedness and response elements of emergency management, or via other regulatory programs at the federal and state levels.

Carbonate Bedrock Standards

The LVPC *Minimizing Sinkhole Occurrences* (1988) provides a general understanding of sinkholes and how they can form. The document provides recommended ordinance provisions for municipal consideration to minimize the potential for sinkhole occurrence as it relates to new development. Within the Lehigh Valley, 47 of the 62 municipalities are underlain entirely or in part by carbonate bedrock, which is prone to sinkholes. There are 22 municipalities within the two counties that have adopted carbonate bedrock standards since 1986, as shown below.

Further, it is noted that the boroughs of Glendon and West Easton are covered under the Northampton County Subdivision and Land Development Ordinance carbonate bedrock provisions.

<table>
<thead>
<tr>
<th>Lehigh County</th>
<th>Northampton County</th>
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<tbody>
<tr>
<td>Upper Saucon Township</td>
<td>Forks Township</td>
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<tr>
<td>Emmaus Borough</td>
<td>Lower Mt. Bethel Township</td>
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<tr>
<td>Lower Macungie Township</td>
<td>Bethlehem Township</td>
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<tr>
<td>North Whitehall Township</td>
<td>East Allen Township</td>
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<td>Whitehall Township</td>
<td>Stockertown Borough</td>
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<td>Upper Mt. Bethel Township</td>
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<td>Williams Township</td>
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<td></td>
<td>Freemansburg Borough</td>
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<td>Wilson Borough</td>
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</tbody>
</table>
Official Map
An official map shows the locations of planned future public lands and facilities such as streets, trails, parks and open space. The official map expresses a municipality’s interest in acquiring these lands for public purposes and notifies developers and property owners of this interest. The MPC defines an official map as a “land use ordinance.” If a landowner seeks to build on or subdivide land noted on the official map, the municipality has up to a year to acquire the land from the owner before the owner may freely build or subdivide. Ultimately, an official map can serve as a tool to promote growth and infrastructure in appropriate areas, mitigating costs and risks to life associated with hazards. In addition to Lehigh County, 12 Lehigh Valley municipalities have adopted an Official Map, as shown below.

Lehigh County
Catasauqua Borough
Lower Macungie Township
South Whitehall Township
Whitehall Township
Upper Milford Township
Upper Saucon Township

Northampton County
Allen Township
Bushkill Township
East Allen Township
Hanover Township
Moore Township
Tatamy Borough

2009 International Property Maintenance Code
The International Property Maintenance Code (IPMC) is intended to establish minimum maintenance standards for basic equipment, light, ventilation, heating, sanitation and fire safety. Responsibility is fixed among owners, operators and occupants for code compliance. South Whitehall Township identified the IPMC as an additional regulatory tool in place in the community.
5.2.2 Administrative and Technical

Administrative and technical capability refers to the community’s staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. It includes planners, engineers, emergency managers, floodplain administrators/managers, land surveyors, staff familiar with community hazards, personnel skilled in GIS, and grant writers. It also refers to the ability to access and coordinate these resources effectively. The degree of intergovernmental coordination among departments also affects administrative capability. Municipal responses to an administrative and technical capability survey can be found in their municipal annexes.

Overall, Lehigh Valley municipalities have a moderate to high level of administrative and technical capability, with smaller communities such as the boroughs having more limited capability. About 77% of municipalities indicated they have planners with land use/land development knowledge. About 69% have planners or engineers with knowledge of natural or non-natural hazards, however, 79% indicated that they did have staff familiar with community hazards. In addition, about 84% of municipalities indicated that they have engineers or other professional staff trained in building and/or infrastructure construction practices. Municipalities are more limited in personnel related to GIS skills, as well as grant writers.

More than three-fourths of the municipalities did not identify any changes in their administrative and technical capabilities since the 2013 Plan. Education and training for staff was the primary response for improving capabilities.

Municipalities are further supported by county and regional administrative and technical capabilities, including Lehigh and Northampton counties, Lehigh Valley Planning Commission, Lehigh Valley Transportation Study, Lehigh Valley Regional Partnership, local environmental groups and watershed associations. Additional technical assistance is available for mitigation activities from a number of state and federal agencies, including:

- Pennsylvania Emergency Management Agency
- US Department of Agriculture
- Pennsylvania Department of Environmental Protection
- US Department of Housing and Urban Development
- Pennsylvania Department of Conservation and Natural Resources
- Economic Development Administration
- Pennsylvania Department of Transportation
- Emergency Management Institute
- Federal Emergency Management Agency
- US Environmental Protection Agency
- US Army Corps of Engineers
- Small Business Administration

It is noted that both counties, and many of the municipalities, have identified specific mitigation initiatives in the 2018 Plan to help build and enhance mitigation-related administrative and technical capabilities in the Lehigh Valley.
5.2.3 Financial

Financial capabilities are the resources that a municipality has access to or is eligible for to fund mitigation actions and include capital improvement programming; Community Development Block Grants; special purpose taxes; gas/electric utility fees; water/sewer fees; stormwater utility fees; development impact fees; general obligation, revenue, and/or special tax bonds; and partnering arrangements or intergovernmental agreements. The costs associated with implementing mitigation activities vary. Some mitigation actions such as outreach and education efforts require little to no costs other than staff time and existing operating budgets. Other actions such as acquisition of flood-prone properties could be largely or entirely dependent on available funding. As such, it is critical to identify all available sources of funding at the local, county, regional, state and federal level to support implementation of the mitigation actions identified in the 2018 Plan. Municipalities fund mitigation projects through existing local budgets, local appropriations (including referendums and bonding), and through a variety of federal and state loan and grant programs.

Municipal responses to the financial capabilities survey can be found in their municipal annexes. While most of the identified financial capabilities are available to all of the municipalities in the Lehigh Valley, the extent to which communities have leveraged these funding sources varies widely. It is logical to expect that communities that are familiar with accessing specific grant programs will continue to consider and pursue those sources.

The findings of the survey indicate that, overall, municipalities are limited in their financial capabilities. About half the municipalities responding indicated that they have capital improvement programming. About 61% of responding municipalities identified CDBG funding as a financial resource. Most municipalities do not have special purpose taxes and eight indicated they collect stormwater utility fees to fund stormwater system improvements. In addition, about 44% of municipalities collect development impact fees and 40% utilize general obligation, revenue, and/or special tax bonds. Six municipalities indicated that they collect gas/electric utility fees. One municipality noted that a fire service tax was under development.
About 84% of municipalities did not identify any changes in financial capability since the 2013 Plan. Several of those that did comment noted a reduction in some capabilities, including CDBG eligibility and capital improvement programming. Some municipalities provided suggested improvements to the financial capabilities, including providing additional funding to capital improvement programming, streamlining the CDBG application process and promoting intergovernmental cooperation by the counties.

**Federal Hazard Mitigation Assistance Funding Opportunities**

**Hazard Mitigation Grant Program (HMGP)**

The HMGP is a post-disaster mitigation program. It is made available to states by FEMA after each federal disaster declaration. The HMGP can provide up to 75% funding for hazard mitigation measures. The HMGP can be used to fund cost-effective projects that will protect public or private property in an area covered by a federal disaster declaration or that will reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood proofing or elevation to reduce future damage, minor structural improvements and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved Hazard Mitigation Plan. Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to PEMA and placed in rank order for available funding and submitted to FEMA for final approval.

**Flood Mitigation Assistance (FMA) Program**

FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP-insured homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is 75%. At least 25% of the total eligible costs must be provided by a non-federal source. Of this 25%, no more than half can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. FMA funds are distributed from FEMA to the state. PEMA serves as the grantee and program administrator for FMA.
Pre-Disaster Mitigation (PDM) Program
The PDM program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funding is available for up to 75% of eligible activity costs and up to 90% for small, impoverished communities. As with the HMGP and FMA, a FEMA-approved local Hazard Mitigation Plan is required to be approved for funding under the PDM program.

Federal Funding Assistance Opportunities
Other federal programs that may provide financial support for mitigation actions include, but are not limited to:
- Department of Energy Weatherization Assistance Program
- FEMA Community Disaster Loan Program
- FEMA Emergency Management Performance Grants
- FEMA Environmental Planning and Historic Preservation Program
- FEMA Public Assistance Program
- FEMA Individuals and Households Program
- HUD Community Development Block Grants
- HUD Disaster Housing Assistance Program
- Department of Agriculture Watershed Protection and Flood Prevention Program
- Department of Agriculture Energy Conservation Program
- Department of Agriculture Non-Insured Crop Disaster Assistance Program
- Army Corp of Engineers Floodplain Management Services Program
- Department of Homeland Security

State Funding Assistance Opportunities
State programs that may provide financial support for mitigation actions include, but are not limited to:
- DCED Flood Mitigation Program
- DCED H2O PA Flood Control, Water Supply, Sanitary Sewer and Stormwater Projects
- DCED PA Small Water and Sewer Program
- DCED Municipal Assistance Program
- DCNR Community Conservation Partnerships Program
- DCNR Pennsylvania Recreational Trails Program
- DEP Growing Greener Program
- Pennsylvania Emergency Management Agency
- Pennsylvania Infrastructure Investment Authority
- PennDOT Pennsylvania Infrastructure Bank Loan

Local Funding Assistance Opportunities
Local programs that may provide financial support for mitigation actions include, but are not limited to:
- Lehigh County Local Emergency Planning Committee
- Northampton County Local Emergency Planning Committee
- County and Municipal Budgets
- County and Municipal DCED
5.2.4 Education and Outreach

This type of capability refers to education and outreach programs and methods already in place in a community that could be used to implement mitigation activities and communicate hazard-related information to the public, including Firewise Communities certification, StormReady certification, natural disaster or safety-related school programs, ongoing public education/information program, public-private partnership initiatives, and local citizen groups of nonprofit organizations. The Firewise Communities program is a national program that emphasizes community involvement and provides information for residents to reduce the risk of wildland fire igniting homes. The National Weather Service StormReady program encourages communities to take a proactive approach to improving local hazardous weather operations and public awareness. Municipal responses to the education and outreach survey can be found in their municipal annexes.

Overall, Lehigh Valley municipalities have low to moderate education and outreach capabilities based on survey results. About 82% of municipalities that responded have an ongoing public education or information program in place. About 24% have natural disaster or safety-related school programs. Three municipalities have Firewise Communities certification. Both counties are StormReady certified and four municipalities indicated they have certification. Twelve municipalities cited public-private partnership initiatives. About half the municipalities responding identified local citizens groups or nonprofit organizations that provide education to the public. One municipality identified the presence of internal safety and public safety committees as an additional capability.

About 82% of municipalities did not identify any changes in education and outreach capabilities since the 2013 Plan. Of those indicating a change, enhanced websites, education provided to daycare staff and healthcare facilities, an active Environmental Advisory Council and increased outreach through newsletters were identified as some of the changes. When asked how capabilities can be improved, responses included funding, greater community/business involvement, greater focus on hazard-related information, additional public presentations, obtain StormReady certification, emergency awareness meetings and a fire prevention initiative.
Lehigh County Emergency Management Agency and Northampton County Emergency Services have the following education and outreach capabilities:

**Public Information Programs**

- **Flood Maps/Data** – The counties have access to this type of information through their GIS departments, as well as other information that is available through the county assessment offices. Information available through the county assessment offices includes County/Municipality Maps, District/Ward Maps, Millage Rate schedules, Property Assessment Records and Deeds.

- **Library Resources** – The counties have educational materials available upon request that are used at public speaking events, when appropriate.
  - Pennsylvania Emergency Preparedness Guides
  - Various types of training videos
  - American Red Cross packets for flash flooding, hurricane, thunder and lightning, tornado, winter storms
  - Family disaster planning guides
  - Homeland Security information for businesses, families, individuals, neighborhoods and schools
  - Pandemic brochures

- **Outreach Projects**
  - **Are You Ready?** – An in-depth program for citizen Preparedness (individual, family and community preparedness). Provides a step-by-step approach to disaster preparedness by walking the student through how to get informed about local emergency plans, how to identify hazards that affect their area, and how to develop and maintain an emergency communications plan and disaster supply kit. Other topics covered include evacuation, emergency public shelters, animals in disaster and information specific to people with disabilities. The course also provides in-depth information on specific hazards such as floods, tornadoes, hurricanes, thunderstorms and lightning, winter storms and extreme cold, extreme heat, earthquakes, volcanoes, landslide and debris flows (mudslide), tsunamis, fires, wildfires, hazardous materials incidents, household chemical emergencies, nuclear power plant, and terrorism (explosion, biological, chemical, nuclear, and radiological hazards) and includes what to do before, during and after each hazard type.

  - **Ready…Pack…Go** – This Lehigh County program is to encourage community members and their families to be self-sufficient for at least 72 hours. The theme of “Ready…Pack…Go” is to be “ready” to have a plan for you and your family; “pack” to have pre-packed food, water and supplies; and “go” to a safe location based on the type of disaster. What if there was an emergency today? Are you ready? Learn how to protect yourself, your family and your pets!

  - **Red E. Fox Children’s 9-1-1 Program** – Northampton County participates in the Red E. Fox program. The mission and purpose of this
program is to teach children how to save lives and property through the proper use of 9-1-1, the nation’s universal emergency telephone number. Red E. Fox delivers this message and teaches children when to use 9-1-1 and when not to, how to place a 9-1-1 call, and what to say to the dispatcher during a police, fire, or medical emergency. Red E. Fox was created as a 9-1-1 Public Safety icon in the tradition of Smokey Bear and McGruff the Crime Dog.

- **SERVPA** - SERVPA is a secure, confidential volunteer registry site. Volunteers that register through SERVPA are open to the idea of volunteering in case of an emergency. The registration provides a little about their background, preferences and constraints. It does not guarantee that they will be called upon, nor does it mean that they must participate if called. If a volunteer is called to assist in an event or emergency, they will have the opportunity to learn more about the specific event and the commitment required. Lehigh County has utilized this system for the past 10 years to call out volunteers during emergencies, announce training opportunities, provide call down drill notifications and announce outreach events. Northampton County is in the initial stages of building up its community volunteering program.

- **Community Emergency Response Teams (CERT)** – Training to educate citizens about disaster preparedness and training in basic disaster response skills, such as fire suppression, disaster medical operations, light search and rescue, team organization, disaster psychology, and terrorism awareness. The goal of this program is for emergency personnel to train members of neighborhoods, community organizations, or workplaces in basic response skills. If a disastrous event overwhelms or delays the community’s professional response, CERT members can assist others by applying the basic response and organizational skills that they learned during training. These skills can help save and sustain lives following a disaster until help arrives.

- **Citizen Corps Council** – The mission of Citizen Corps is to harness the power of every individual through education, training, and volunteer service to make communities safer, stronger, and better prepared to respond to the threats of terrorism, crime, public health issues and disasters of all kinds.

- **Emergency Management courses** are provided through the county EMA offices to the local coordinators and elected officials. The following courses are provided: Duties and Responsibilities of the Local Emergency Management Coordinator (LEMC), Elected Officials Seminar, Initial Damage Assessment, Safe Schools Training, National Incident Management System, Work Environment of the LEMC and numerous FEMA Independent Study Courses.

- **Local Emergency Planning Committee (LEPC)** – The LEPC works closely with the business community to form a safety net around the chemical industry to protect the
general population from the possible outcome of hazardous material incidents. The LEPC has a minimum of seven members and includes at least one representative from each of the following groups:
- Elected Official representing local governments within the county
- Law enforcement, first aid, health, local environmental, hospital and transportation personnel
- Firefighting personnel
- Civil Defense and emergency management personnel
- Broadcast and print media
- Community groups not affiliated with emergency service groups
- Owners and Operators of facilities subject to the requirements of SARA Title III

- **Technical Assistance** – The county EMA offices can support local, public and private entities as needed through coordination and provision of information and equipment resources. These include both existing county capabilities, such as County Hazardous Materials Response Team and Technical Rescue Teams, and predetermined private and public resources.

The Lehigh County Special Operations Team is/has:
- Greater than 30 active members trained to Operations and Technician level in compliance with OSHA 1910.120.
- Personal Protective Equipment (PPE) for all levels of HazMat entry. Level A, B, C.
- Self-contained breathing apparatus for 22 team members with in-suit communications. Dedicated radio frequencies.
- Monitoring equipment for Radiation, Chemical & Biological Warfare, Mercury and Industrial Toxics available at any time.
- Spill Containment and Mitigation supplies for spills, large and small.
- Specialized equipment for tanker and rail car emergencies.
- Certifications in the following: Confined Space Rescue Technician, Trench Rescue Technician, Low and High Angle Rope Rescue, Structural Collapse, and Incident Command.
- Medically trained members in CPR, AED, EMT and Paramedic, Nurse and Doctors.
- Paramedics and Doctors trained in Rescue Medicine to aid in the care of Technical Rescue Patients.
- Drone program used for:
  - Damage Assessment
  - Active Incidents

Northampton County Emergency Management Services provides IMT: Incident Management Teams and support, and supplements the contractual Hazardous Materials Response Team of Lehigh County Special Operations during HazMat incidents through trained staff, support equipment and assets. Northampton County personnel staff two HazMat
technicians, while all others are trained to HazMat Operations Level.

Lehigh County provides contractual Hazardous Materials Response Team coverage to Northampton County.

Northampton County has specialized equipment and apparatus to support incidents, such as:
- Command Post
- Mobile Communication
- Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) support truck –
  - Carries specialized equipment for decontamination and air monitoring
  - Equipment to support HazMat operations
  - Radiological and air monitoring equipment
- HazMat support trailers
  - Equipment for mass decontamination
- Firefighting Foam trailers
  - Vapor suppression and/or firefighting for use with Hazardous materials incidents.

To protect the assets of both counties, the capabilities listed are a brief description of equipment and services provided within the two counties and any contiguous counties.

Lehigh and Northampton counties have already taken several steps to take control of the drug overdose epidemic. Northampton County created the Heroin and Opioid Overdose Task Force that secured a $103,000 state grant in 2017 to provide communities with Naloxone and to fund the Angel program, which enables addicts to turn in their drugs at any police station, without fear of arrest, in exchange for help in finding treatment. Lehigh County has instituted the Blue Guardian program, in which police and a recovery specialist, within a few days, visit the home of anyone who has been saved by Naloxone to help them seek treatment. Both counties have joined court actions seeking monetary damages from Opioid manufacturing companies to help fund more programs to control the crisis.

The LVPC also has a variety of informational resources available to the public. Many of the publications discussed previously are available for review by the public at the LVPC office or on the LVPC website. The LVPC also provides or hosts a variety of educational workshops for the public. The Lehigh Valley Government Academy has sponsored seminars related to stormwater management, floodplain issues, model environmental ordinances, Growing Greener-Conservation by Design, and basic courses in subdivision and land development review, zoning and community planning. The LVPC, in partnership with PennDOT, hosts the Local Technical Assistance Program, providing free technical information and proven
technologies dealing with roadway maintenance and safety methods. The LVPC’s popular Planning and Pizza series included recent sessions on the regional Hazard Mitigation Plan, regional Comprehensive Plan, Monocacy Creek Act 167 Plan, Lehigh County Parks and Agriculture Planning and the Transportation Improvement Program. Copies of the floodplain mapping and flood studies prepared by FEMA for Lehigh County are available for public review at the LVPC office. The floodplain mapping currently in effect in Lehigh County is dated July 16, 2004. Paper copies of the Northampton County flood maps and studies, effective July 16, 2014, are not available at the LVPC, however, the LVPC responds to floodplain information requests from the public related to the mapping and studies.

Self-Assessment of Capability

In addition to the inventory and analysis of specific local capabilities, the Capability Assessment Survey required each municipality to complete its own self-assessment of its capability for each of the four categories to effectively implement hazard mitigation actions. Respondents were required to identify their degree of capability as “Limited”, “Moderate” or “High”. More than 80% of the municipalities responding to the survey did not identify any change in degree of capability for any of the four categories since the 2013 Plan. For those that did provide comments, several noted a higher degree of education and outreach capability due to improvements in community outreach through enhanced websites and use of social media. Several others noted an increase in the administrative and technical capability due to hiring new staff. One municipality indicated a lesser degree of capability for all four categories due to less staff and unfunded mandates using municipal funds. Responses to the survey can be found in the municipal annexes.

### SUMMARY OF MUNICIPAL CAPABILITY SELF-ASSESSMENT RESPONSES*

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<th></th>
<th>Limited</th>
<th>Moderate</th>
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<tr>
<td>Planning &amp; Regulatory</td>
<td>18%</td>
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<td>Administrative &amp; Technical</td>
<td>16%</td>
<td>57%</td>
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<tr>
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<td>44%</td>
<td>34%</td>
<td>22%</td>
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<tr>
<td>Education &amp; Outreach</td>
<td>33%</td>
<td>48%</td>
<td>19%</td>
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</tbody>
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* Expressed as percentage of responses received.
5.2.5 Plan Integration

Plan integration is the process by which communities look critically at their existing planning framework and align efforts with the goal of building a safer, smarter community. Plan integration involves a two-way exchange of information and incorporation of ideas and concepts between hazard mitigation plans (state and local) and other community plans. Specifically, plan integration involves the incorporation of hazard mitigation principles and actions into community plans and community planning mechanisms into hazard mitigation plans. In the Lehigh Valley, there are many existing plans and programs that support hazard risk management, and so it is critical that the 2018 Plan continue to integrate and coordinate with, and complement, those mechanisms.

Numerous existing plans, studies, reports and technical information were reviewed and incorporated into the 2018 Plan. The use of this information is cited in the various sections where it is used. An all-inclusive list of resources used to prepare the Plan is located in Appendix A.

The Community Profile section was prepared using existing LVPC plans and data, including the Comprehensive Plan The Lehigh Valley...2030 (2005), BuildLV: Lehigh Valley Annual Development Report (2017), MoveLV: Long Range Transportation Plan (2017) and The People (2017). Data incorporated into this section included environmental information, Lehigh Valley population and employment projections through 2040, development trends and transportation infrastructure. The LVPC also provided GIS mapping using existing layers. The US Census Bureau American Community Survey provided demographic and housing data.

An extensive list of data sources, vital to the identification of historical disaster events and their impacts on the region, was reviewed and incorporated into the Risk Assessment section, including the Comprehensive Plan The Lehigh Valley...2030 (2005), National Climatic Data Center, Lehigh and Northampton County Knowledge Center databases, Pennsylvania 2013 Standard State All-Hazard Mitigation Plan, among others. Federal Emergency Management Agency data related to Presidential Disaster Declarations, repetitive property losses and National Flood Insurance Program policies and claims were also incorporated into the 2018 Plan. Existing GIS layers were used in conjunction with existing Lehigh and Northampton County tax parcel data for the hazard vulnerability assessments. FEMA floodplain mapping for Northampton County, which became effective in July 2014, was incorporated into the Flood profile.

In addition, existing municipal plans and programs incorporated in the 2018 Plan are documented in the Capability Assessment Survey located in the municipal annexes.
It is the intention of this 2018 Plan that the municipalities continue to incorporate the findings and recommendations into future local planning efforts and into the overall execution of their land use planning process. Some of the most important planning and regulatory capabilities for hazard mitigation integration include comprehensive plans, zoning and subdivision/land development ordinances, emergency operations plans and building codes. Further, the sample adoption resolutions in Appendix I includes a resolution item stating the intent of the local governing body to incorporate mitigation planning as an integral component of government and partner operations. The Administrative Planning Team will work with local government officials to integrate hazard mitigation goals and actions into the general operations of government and partner organizations.

The two counties and municipalities in the Lehigh Valley recognize that the findings and recommendations of the 2018 Plan need to be incorporated into their emergency planning, preparedness, response and recovery programs and operations. Specifics about response and recovery programs and efforts in the Lehigh Valley have led to county and local mitigation actions to improve regional emergency management coordination and build related risk management capabilities. Public education and outreach to improve personal preparedness and promote an awareness of mitigation opportunities and personal protection through risk insurance have also been incorporated in county and local mitigation actions.

**FutureLV: Lehigh Valley Comprehensive Plan**

The LVPC, at the time of this 2018 Plan, was in the process of updating the Comprehensive Plan The Lehigh Valley…2030, which was adopted by both counties in 2005. While the 2005 Comprehensive Plan does not specifically discuss hazard mitigation planning, the plan’s goals, policies and strategies are aligned with the goals of the hazard mitigation plan. For example, the 2005 Comprehensive Plan includes a number of goals related to hazard mitigation planning, including, but not limited to the following:

- To minimize flood damage and protect floodplains
- To protect the remaining wetlands in the Lehigh Valley
- To minimize the adverse environmental impacts of steep slope development
- To minimize the hazards to development in areas where carbonate bedrock exists
- To protect and manage the region’s woodland resources
- To preserve open space and important natural areas
- To provide a safe, well-maintained road network that facilitates the movement of traffic
- To construct highway and bridge improvements that are compatible with the conservation, development and redevelopment goals of the plan
- To support expansion of the public transit system and to advocate transit use as an alternative to single-occupant driving
- To manage the rate, volume and quality of storm runoff for protection of public safety and welfare, property and the environment

However, the LVPC recognizes the need to more fully integrate hazard mitigation principles in the comprehensive plan update, which will also incorporate MoveLV, the
region’s Long-Range Transportation Plan, in an effort to create a more disaster-resilient Lehigh Valley. In addition, new federal requirements state that future Long-Range Transportation Plan updates must work on “improving the resiliency and reliability of the transportation system and reducing or mitigating the stormwater impacts of surface transportation.”

The intent of hazard mitigation planning is to be proactive by taking steps to mitigate potential impacts to persons and property prior to hazard events. Three of the four themes in One Lehigh Valley—environment, transportation and livable communities—are common elements shared by the comprehensive plan and hazard mitigation plan. The Climate and Energy Element provides a number of preventive goals, policies and implementation strategies to be included in the regional comprehensive plan that can be used to lessen the impact of hazards. The goal of protecting public infrastructure from potentially harmful impacts associated with climate change is inextricably linked to the goals in the MoveLV: Long-Range Transportation Plan, which will be integrated with all subsequent comprehensive plan updates. Many of the plans for the Lehigh Valley highlight the need to protect, conserve and enhance natural ecosystems to provide long-term resilience to climate change as a goal. In addition to protecting natural resources, the Climate and Energy Element addresses the impacts of future development. One goal advocates providing building and site design practices that help to mitigate climate change impacts. These goals were created to protect residents, property and critical facilities from natural hazards that evolve over time due to climate change.

The Lehigh Valley Return on Environment (2014), which quantifies the economic benefits provided by open space for natural systems services, air quality, outdoor recreation and property value, has many ties to hazard mitigation planning that can be integrated into FutureLV. Natural system services includes flood mitigation, water supply and soil retention benefits of open space that clearly link to hazard mitigation. Further, the air quality monetary benefits are partially based on the carbon sequestration benefits of trees to mitigate the impacts of climate change and reduce impacts such as drought, extreme temperature and severe weather. Importantly, the Return on Environment study assigns dollar values to these resources that aid in securing funding for projects that protect them.

The Floodplain Guide|Model Regulation (2014) deals directly with municipalities maintaining compliance with the National Flood Insurance Program and actions to provide higher regulation of flood prone areas, especially related to repetitive loss and severe repetitive loss properties.

The Green Infrastructure Guidelines (LVPC 2017) and the Monocacy Creek Act 167 Plan (2018) bring two important hazard mitigation elements regarding water balance and use of green stormwater practices to FutureLV. Water balance refers to how rainfall is distributed to groundwater recharge, runoff and evapotranspiration to the atmosphere by the natural environment versus the built environment. Replacement of meadows, agriculture and other pervious surfaces that allow infiltration to groundwater with impervious surfaces that prevent infiltration can significantly increase runoff and reduce groundwater recharge and evapotranspiration. Stormwater management practices also have a significant
impact on water balance, whether designers choose detention basins, rain gardens or underground infiltration facilities, for example. Standards in the Monocacy Plan seek to create a built environment with stormwater management controls that mimic the natural water balance, thereby providing drought and flood mitigation benefits. The green infrastructure guidelines work hand in hand with the water balance standards by requiring green infrastructure practices “first” in a land development plan. This translates to preserving a site’s natural resources as much as possible and using vegetative stormwater management practices. Both practices provide climate change mitigation along with flood, drought and extreme temperature mitigation, among others. Further, these efforts are part of the larger One Water effort to consider all aspects of water management planning and integrate with land use planning and comprehensive planning.

The Livable Landscapes plans created for Lehigh and Northampton counties bring together the elements of the various LVPC open space and natural resources plans and policies including all the guides and model ordinances, the Lehigh Valley Planning Commission Natural Resources Plan, Natural Heritage Inventory, Return on Environment study and the Greenways Plan, among others. These efforts reinforce the hazard mitigation benefits of natural resources, build on the existing goals, policies and implementation strategies of the Comprehensive Plan and align with the natural resource goal of the hazard mitigation plan.

CAPABILITY ASSESSMENT SUMMARY

The described capabilities at the county and local levels when compared to the hazard risks for the Lehigh Valley identify gaps in capability that should be reconciled with recommended actions. The intention is to improve future capabilities thereby further reducing the Lehigh Valley’s vulnerability to hazard risks and improving the overall resiliency of the region. The capability assessment resulted in mitigation actions identified by the counties, LVPC and municipalities to enhance the capabilities of the Lehigh Valley.