

6. MITIGATION STRATEGY

6.1 UPDATE PROCESS SUMMARY

The 2018 Plan focuses on improving the county and local mitigation strategies from the 2013 Plan. Throughout the planning process, both counties and all municipalities were encouraged to thoroughly consider their natural and non-natural hazard risks and vulnerabilities, and to identify appropriate actions to mitigate those risks.

The 2006 and 2013 Lehigh Valley Hazard Mitigation Plans included goals and actions. Objectives are a new component of the 2018 Plan. Goals are general guidelines that describe what the region would like to achieve. Objectives define strategies that must be implemented to achieve the identified goals and are specific and measurable. Actions provide more detailed descriptions of specific work tasks to help the counties and municipalities achieve prescribed goals and objectives.

Objectives were developed and included in the 2018 Plan. A mitigation technique matrix was completed to identify and evaluate possible mitigation actions for each hazard. Municipal actions were categorized and prioritized on a regional basis. National Flood Insurance Program-related actions are identified.

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Counties and
62
municipalities
have devised
1,161
actions designed
to prepare the
Lehigh Valley
for disaster

For the 2018 Plan, the eight existing goals from the 2013 Lehigh Valley Plan were reviewed with the Planning Team, stakeholders and the public. The public was provided opportunities to comment on the existing goals through public meetings. Four comments were received on the goals. Four of the goals were confirmed and carried over to the 2018 Plan and four were revised slightly. The goals were revised in some cases to be more specific or inclusive, such as including woodlands under natural resources and including functional loss in addition to damages. In other cases, they were revised to be less specific to integrate with the newly created objectives, such as removing repetitive loss structures from the hazard avoidance goal, and to better reflect actions appropriate at both the county and local government levels.

The Planning Team concurred with the proposed revisions to the goals. The *Pennsylvania 2013 Standard State All-Hazard Mitigation Plan* was also reviewed to ensure that the 2018 Plan goals complement and support the five state goals identified below:

- Protect lives, property, environmental quality, and resources of the Commonwealth, including Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties.
- Enhance consistent coordination, collaboration, and communications among stakeholders.
- Provide a framework for active hazard mitigation planning and implementation.
- Build legislative support and secure funding for mitigation efforts.
- Increase awareness, understanding, and preparedness across all sectors.

The 2013 Lehigh Valley Plan identified 937 municipal actions to mitigate the impact of hazards and 45 county-level actions/initiatives, which included actions for the LVPC.

The status of these actions, whether completed, discontinued or no progress, was documented as part of this 2018 plan to identify those actions to be carried forward.

6.2 MITIGATION GOALS AND OBJECTIVES

To ensure the goals reflect updated conditions, the goal evaluation process included a review of the updated capability assessment and risk assessment, which included three new hazard profiles. Based on this review, the Planning Team determined that the revised goals reflect the region's vision for a disaster-resilient Lehigh Valley.

For the 2018 Plan, objectives were created for each of the eight goals for a total of 23 objectives. The Planning Team reviewed and concurred with the objectives. Goals and objectives that relate to a community's continued compliance with the National Flood Insurance Program are noted with (NFIP).

Goal 1: To minimize the risk to human life associated with natural and non-natural hazards (NFIP).

OBJECTIVES:

- A. Create a better understanding among the public and local governments of the benefits and opportunities associated with hazard mitigation planning and actions. (NFIP)
- B. Continuously promote and maintain better early warning and emergency communications.
- C. Provide added protection for vulnerable populations. (NFIP)

Goal 2: To promote hazard avoidance, especially in floodplains (NFIP).

OBJECTIVES:

- A. Minimize future risks of losses associated with structures, including repetitive loss structures. (NFIP)
- B. Reduce flooding potential through planning, training and outreach. (NFIP)
- C. Encourage and facilitate the development or revision of comprehensive plans and zoning/land use ordinances to limit development in high-hazard areas.

Goal 3: To reduce the damages and functional loss from natural and non-natural hazards to existing and future public and private assets, including structures, critical facilities and infrastructure (NFIP).

OBJECTIVES:

- A. Identify the current risks of critical facilities and infrastructure from hazards, and determine actions to lessen those risks in the future. (NFIP)
- B. Encourage and/or perform regular maintenance and upgrades of existing drainage systems potentially impacting critical facilities.
- C. Encourage and/or provide backup power resources (generators) for critical facilities.

Goal 4: To preserve and enhance the effectiveness of natural resources, including woodlands, streams, rivers, wetlands, floodplains and riparian buffers to provide resiliency benefits (NFIP).

OBJECTIVES:

- A. Encourage and/or provide maintenance and restoration of streams and rivers and associated floodplains to naturally provide flood mitigation.
- B. Encourage regulation of and/or regulate development in priority conservation areas, including floodplains, to minimize flood damage. (NFIP)

Goal 5: To develop, prioritize and implement cost-effective, long-term actions that will reduce the impacts of natural and non-natural hazards (NFIP).

OBJECTIVES:

- A. Thoroughly assess the community and established capabilities and identify specific cost-effective actions for improvement, relative to existing and future hazard risks. (NFIP)
- B. Establish mitigation action priorities and encourage and track progress. (NFIP)

Goal 6: To improve local regulations to reduce the impacts of natural and non-natural hazards (NFIP).

OBJECTIVES:

- A. Better integrate hazard mitigation planning with comprehensive planning and land use regulations. (NFIP)
- B. Identify and promote “best practices” for municipal regulation of land use in zoning and subdivision ordinances and official maps.
- C. Encourage proactive planning for potential hazard events and potential related property damage. (NFIP)
- D. Incorporate hazard mitigation planning into existing municipal policy.

Goal 7: To enhance planning and emergency response efforts among federal, state, county and local emergency management personnel to protect public health and safety.

OBJECTIVES:

- A. Continually improve communication capabilities, training and coordination for hazard events.
- B. Continually improve the planning for shelters, evacuation routes and disaster recovery.
- C. Continue the promotion of disaster resiliency in the business community.
- D. Maintain and/or upgrade emergency response equipment and resources.

Goal 8: To promote public awareness on both the potential impacts of natural and non-natural hazards and actions to reduce those impacts (NFIP).

OBJECTIVES:

- A. Encourage and/or provide education and outreach to increase awareness of hazards and opportunities for mitigation. (NFIP)
- B. Encourage and/or provide public education programs for businesses, households and individuals on mitigation, safety measures and preparedness.

6.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

The 2018 Plan mitigation strategy included an analysis of a comprehensive range of mitigation actions with an emphasis on existing and new buildings. The *Commonwealth of Pennsylvania All-Hazard Mitigation Planning Standard Operating Guide*, October 2013, and *FEMA Local Mitigation Planning Handbook*, March 2013, identify four types of actions or techniques for consideration in developing the mitigation action plan:

- **Local Plans and Regulations**
- **Structure and Infrastructure**
- **Natural Systems Protection**
- **Education and Awareness**

Mitigation techniques for each hazard are shown in Table 6.3.1.

Table 6.3.1 Mitigation Techniques

Hazard	MITIGATION TECHNIQUE CATEGORIES			
	Local Plans and Regulations	Structure and Infrastructure	Natural Systems Protection	Education and Awareness
Natural Hazards				
Drought	X	X	X	X
Earthquake	X	X		X
Extreme Temperature	X	X	X	X
Flood, Flash Flood, Ice Jam	X	X	X	X
Hailstorm		X		X
Invasive Species	X		X	X
Landslide	X	X	X	X
Lightning Strike	X	X		X
Pandemic and Infectious Disease				X
Radon Exposure		X		X
Subsidence/Sinkhole	X	X	X	X
Wildfire	X	X	X	X
Windstorm/Tornado	X	X		X
Winter Storm		X		X
Non-Natural Hazards				
Civil Disturbance/Mass Gathering		X		X
Dam Failure	X	X		X
Drug Overdose Crisis				X
Environmental Hazards/Explosion	X	X		X
Fire (Urban/Structural)	X	X		X
Levee Failure	X	X		X
Nuclear Incident	X	X		X
Structural Collapse	X	X		X
Terrorism	X	X		X
Transportation Crash	X	X		X
Utility Interruption		X		X

6.4 MITIGATION ACTION PLAN

On January 18, 2018, mitigation strategy ideas were reviewed with and provided to Planning Team members for their consideration. Municipalities were informed that they need at least one mitigation action in the 2018 Plan. Further, all 62 municipalities must have at least one action that relates to continued compliance with the NFIP. During the planning process, municipalities were encouraged to identify mitigation actions, focusing on identifying well-defined, implementable projects with a careful consideration of capabilities, risk reduction, losses avoided, costs and possible funding sources, including mitigation grant programs. Each municipality has identified more than one mitigation action, with at least one that relates to continued NFIP compliance. For the 2018 Plan, 1,102 actions covering all 62 participating municipalities are included in the municipal annexes. An additional 59 county-level actions are identified for the 2018 Plan in the county annex.

More than one related action is provided for each hazard in the 2018 Plan. For the three new hazards—Pandemic and Infectious Disease, Invasive Species and Drug Overdose Crisis—“common” actions related to the three hazards were developed by the Administrative Planning Team for municipal consideration. All municipalities were asked to review the actions and accept, amend or decline any of the actions, or develop their own actions. Fifteen municipalities included all the “common” actions, while ten other municipalities accepted some of the actions or amended them as appropriate for their community.

With the completion of the evaluation of 2013 Plan mitigation actions, those actions identified as “Complete” were removed from the 2018 mitigation actions unless they were part of a larger, ongoing action. Two examples of this are 1) multi-part projects where one or more parts were completed but other parts remain, and 2) continuous actions such as maintaining compliance with the NFIP, where a completed action since 2013 was adopting an updated floodplain ordinance. 2013 actions identified as “Discontinued” have been removed from this Plan. The 2013 actions identified as “No Progress/Unknown”, “In Progress/Not Yet Complete” or “Continuous” have been carried forward in the 2018 Plan. The status of the 2013 Plan actions is provided in the municipal annexes.

Throughout the planning process, the public, through the public meetings, was given the opportunity to identify potential mitigation actions to be included in the Plan.

With all municipal 2018 actions identified, a region-wide mitigation action plan summary was created by categorizing all municipal actions under 28 regional action headings. Specific 2018 actions for each community are identified in the municipal annexes. For each regional action listed, the number of municipalities that include that action in their municipal annex is provided. Actions related to continued NFIP compliance are also identified in the action plan summary. The municipal action plan summary is shown in Table 6.4.1.

In addition, mitigation action numbers that apply to each municipality are documented in the Municipal Action Matrix shown in Table 6.4.2.

Table 6.4.1 Municipal 2018 Action Plan Summary

Regional Action Number	Action Description	# of Municipalities	Hazards Addressed	Mitigation Technique Category	Applies to New/Existing Structures	Goal-Objective #	Priority
1	Retrofit structures in flood-prone areas, with repetitive and severe repetitive loss properties as a priority	48	Flood	Structure and Infrastructure	Existing	2-A	High
2	Purchase or relocate structures in hazard prone areas	47	Flood, Landslide, Subsidence/Sinkhole, Dam and Leves Failure	Structure and Infrastructure	Existing	2-A	High
3	Maintain compliance with the National Flood Insurance Program, including enforcement of floodplain management requirements, floodplain identification and mapping, and flood insurance outreach (NFIP)	57*	Flood	Local Plans and Regulations	Existing	2-A	High
4	Conduct and facilitate community and public outreach for residents and businesses to promote and effect hazard risk reduction (NFIP)	59*	All	Education and Awareness	Both	8-A	High
5	Begin and/or continue the process to adopt higher regulation of floodplains and carbonate bedrock areas (NFIP)	47*	Flood, Subsidence/Sinkhole	Local Plans and Regulations	N/A	2-C	High
6	Determine if CAV or CAC visit is needed and schedule (NFIP)	46	Flood	Local Plans and Regulations	Both	2-B	Low
7	Have designated Floodplain Administrator certified and/or pursue continuing education training (NFIP)	46	Flood	Local Plans and Regulations	N/A	2-B	Medium
8	Participate in the Community Rating System (NFIP)	45*	Flood	Local Plans and Regulations	N/A	2-A	High
9	Obtain/archive elevation certificates (NFIP)	47	Flood	Local Plans and Regulations	N/A	2-A	Low
10	Continue to support implementation, monitoring, maintenance and updating of the plan	61*	All	All	Both	5-C	High
11	Develop/enhance Comprehensive Emergency Management Plans	62*	All	Local Plans and Regulations	Both	6-C	Medium
12	Create/enhance/maintain mutual aid agreements with neighboring communities for continuity of operations	56*	All	All	Both	7-A	Medium
13	Improve post-disaster capabilities, including processing FEMA/PEMA paperwork and qualified damage assessment personnel	55	All	Education and Awareness	N/A	7-A	Low

*County-level mitigation actions are also associated with these categories, noting that for actions that are specifically a municipal responsibility, such as maintaining National Flood Insurance Program compliance, the county actions include encouraging and supporting municipal efforts.

Table 6.4.1 Municipal 2018 Action Plan Summary

Regional Action Number	Action Description	# of Municipalities	Hazards Addressed	Mitigation Technique Category	Applies to New/Existing Structures	Goal-Objective #	Priority
14	Work with regional agencies to develop damage assessment capabilities through training programs, certification of qualified individuals such as floodplain managers (NFIP)	61*	All	Education and Awareness	N/A	5-A	Medium
15	General storm drainage/flooding projects	8	Flood	Structure and Infrastructure	Existing	5-A	Medium
16	Specific storm drainage/flooding projects (non-critical facilities)	22	Flood	Structure and Infrastructure	Existing	5-A	Medium
17	Critical facilities - storm drainage/flooding projects or relocation	3	Flood	Structure and Infrastructure	Existing	3-B	High
18	Critical facilities - back-up power projects	11	All	Structures and Infrastructure	Existing	3-C	High
19	Critical facilities - other projects	16*	All	Structures and Infrastructure	Existing	3-A	High
20	Emergency notifications/ communication/traffic control	4*	All	Education and Awareness	Existing	1-C	High
21	Stream or floodplain restoration/ stabilization projects	8	Flood	Natural Systems Protection	Existing	4-A	Medium
22	Work to minimize tree/electric line conflicts	9*	Windstorm/Tornado, Winter Storm	Structure and Infrastructure	Existing	3-A	High
23	Geotechnical/sinkhole evaluation (adopt construction standards, remediation)	3	Subsidence/Sinkhole	Local Plans and Regulations	Both	6-C	High
24	Hazardous materials inventory/emergency planning, education, certification	4	Environmental/Hazards/ Explosion	Education and Awareness	Both	5-A	High
25	Dam/levee projects	3	Flood, Earthquake	Structure and Infrastructure	Existing	3-A	Medium
26	Specific bridge replacement or retrofits	8*	Flood	Structure and Infrastructure	Existing	3-A	Medium
27	Wildfire mitigation	1	Wildfire	All	Existing	5-A	Medium
28	Integrate hazard mitigation into local plans and ordinances	4*	All	Local Plans and Regulations	Both	6-A	High

*County-level mitigation actions are also associated with these categories, noting that for actions that are specifically a municipal responsibility, such as maintaining National Flood Insurance Program compliance, the county actions include encouraging and supporting municipal efforts.

Table 6.4.2 Municipal Action Matrix

Lehigh County	Regional Action Numbers	Northampton County	Regional Action Numbers
Alburtis Borough	10-11, 14, 19, 22	Allen Township	1-14
Allentown City	1-14, 16-17, 26	Bangor Borough	1-14, 16
Bethlehem City*	1-14, 25	Bath Borough	1-14, 16, 18
Catasauqua Borough	1-16, 19-21, 23	Bethlehem Township	3-4, 10-15, 24
Coopersburg Borough	4, 10-11, 14-15, 19	Bushkill Township	1-14
Coplay Borough	3-5, 10-14, 19, 22	Chapman Borough	1-14, 16
Emmaus Borough	1-4, 9-11, 14-15, 19, 22	East Allen Township	3-4, 11, 15-16, 24, 26
Fountain Hill Borough	3-4, 10-14, 19, 24	East Bangor Borough	1-14, 18, 26
Hanover Township	1, 3-14	Easton City	1-14, 16, 25-26
Heidelberg Township	10-12, 14, 16, 18-19, 22	Forks Township	1-14
Lower Macungie Township	1-14, 21, 26	Freemansburg Borough	1-14, 16
Lower Milford Township	3-14, 16, 19	Glendon Borough	1-14
Lowhill Township	1-14	Hanover Township	1-14
Lynn Township	3-4, 10-15, 18	Hellertown Borough	1-17, 21, 24, 28
Macungie Borough	1-4, 10-14, 16, 21	Lehigh Township	1-14, 18-20
North Whitehall Township	3-4, 10-14, 19	Lower Mt. Bethel Township	1-14
Salisbury Township	3-4, 10-14, 23	Lower Nazareth Township	1-14
Slatington Borough	10-11, 14, 19, 22	Lower Saucon Township	1-14, 16, 21
South Whitehall Township	1-4, 10-14, 16, 18	Moore Township	1-15
Upper Macungie Township	1-14, 25	Nazareth Borough	1-14, 18
Upper Milford Township	1-14, 19, 22	North Catasauqua Borough	1-14
Upper Saucon Township	1-14, 16, 26	Northampton Borough	1-14, 18-19, 21
Washington Township	10-11, 14, 19, 22	Palmer Township	1-14, 28
Weisenberg Township	3-4, 10-14, 19	Pen Argyl Borough	1-14
Whitehall Township	1-14, 16, 18-20, 26	Plainfield Township	1-14, 16, 18, 27-28
		Portland Borough	1-14, 16
		Roseto Borough	1-14
		Stockertown Borough	1-14, 20
		Tatamy Borough	1-7, 9-14, 17, 21, 23, 28
		Upper Mt. Bethel Township	1-14, 16, 22, 26
		Upper Nazareth Township	1-14
		Walnutport Borough	1-14
		Washington Township	1-14, 16, 21
		West Easton Borough	1-14
		Williams Township	1-14, 16
		Wilson Borough	1-14
		Wind Gap Borough	1-14, 16, 18

* Includes Lehigh and Northampton County portions

The regional actions were prioritized against one another on a Lehigh Valley-wide basis by applying the PEMA Multi-Objective Mitigation Action Prioritization criteria. The weighted criteria include:

- Effectiveness (20% of score) – The extent to which an action reduces the vulnerability of people and property.
- Efficiency (30% of score) – The extent to which time, effort and cost is used as a means of reducing vulnerability.
- Multi-Hazard Mitigation (20% of score) – How much the action reduces vulnerability for more than one hazard.
- Addresses High Risk Hazard (15% of score) – How the action reduces vulnerability for people and property from a hazard(s) identified as high risk.
- Addresses Critical Communications/Critical Infrastructure (15% of score) – How the action pertains to the maintenance of critical functions and structures such as transportation, supply chain management, data circuits, etc.

Scores of 1-3 were assigned for each of the criteria, where 1 is low and 3 is high. Actions were then prioritized using the cumulative score assigned to each. Each mitigation action was given a priority ranking (Low, Medium or High) based on the following:

- Low Priority: 0-1.8
- Medium Priority: 1.9-2.4
- High Priority: 2.5-3

Through this method, the benefits that would result from a mitigation action were considered versus the cost based on a planning-level assessment. The benefits of an action

on a general basis are examined under the Effectiveness, Multi-Hazard Mitigation, Addresses High Risk Hazard and Addresses Critical Communications/Critical Infrastructure categories. Cost is examined in the Efficiency category. A full benefit-cost analysis is typically the next step in the process of implementing mitigation actions.

The mitigation action prioritization results are located in Table 6.4.3.

Within the municipal annexes, the mitigation actions that were carried over from the 2013 Plan had been evaluated and prioritized in the 2013 Plan primarily using the PA STEEL (Political, Administrative, Social, Technical, Economic, Environmental, and Legal) methodology defined by state and federal guidelines. Municipalities were requested to update information associated with their 2013 Plan actions from their annex, which includes action priority. Based on this evaluation, there were no changes in priority for these actions at the municipal level, which may differ from the priority at the regional level. Any new actions added by a community were prioritized according to community assessment of vulnerabilities, considering benefits and cost-effectiveness.

The municipal annexes present the updated mitigation strategies identified by both counties and all participating municipalities, including:

- Mitigation actions for individual and multiple hazards
- Identification of the mitigation technique category
- Department or agency primarily responsible for project initiation and/or implementation
- Estimated cost (if known) for the mitigation action, and identification of known or potential sources of funding

Table 6.4.3 Mitigation Action Prioritization

Mitigation Actions		Multi-Objective Mitigation Action Prioritization Criteria Low = 0-1.8 Medium = 1.9-2.4 High = 2.5-3					
Regional Action Number	Action Description	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Total Score/Priority
1	Retrofit structures in flood-prone areas, with repetitive and severe repetitive loss properties as a priority	3	3	1	3	2	2.5
2	Purchase or relocate structures in hazard prone areas	3	3	3	3	2	2.9
3	Maintain compliance with the National Flood Insurance Program, including enforcement of floodplain management requirements, floodplain identification and mapping, and flood insurance outreach	3	3	1	3	3	2.6
4	Conduct and facilitate community and public outreach for residents and businesses to promote and effect hazard risk reduction	3	2	3	3	2	2.6
5	Begin and/or continue the process to adopt higher regulation of floodplains and carbonate bedrock areas	3	3	2	3	2	2.7
6	Determine if CAV or CAC visit is needed and schedule	2	2	1	3	1	1.8
7	Have designated Floodplain Administrator certified and/or pursue continuing education training	2	3	1	3	1	2.1
8	Participate in the Community Rating System	3	3	1	3	2	2.5
9	Obtain/archive elevation certificates for National Flood Insurance Program compliance	1	2	1	3	1	1.6
10	Continue to support implementation, monitoring, maintenance and updating of the plan	3	2	3	3	2	2.6
11	Develop/enhance Comprehensive Emergency Management Plans	2	2	3	3	2	2.4
12	Create/enhance/maintain mutual aid agreements with neighboring communities for continuity of operations	1	2	3	3	2	2.2

Table 6.4.3 Mitigation Action Prioritization

Mitigation Actions		Multi-Objective Mitigation Action Prioritization Criteria Low = 0-1.8 Medium = 1.9-2.4 High = 2.5-3					
Regional Action Number	Action Description	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Total Score/Priority
13	Improve post-disaster capabilities, including processing FEMA/PEMA paperwork and qualified damage assessment personnel	1	1	3	1	1	1.4
14	Work with regional agencies to develop damage assessment capabilities through training programs, certification of qualified individuals such as floodplain managers	1	2	3	3	1	2.0
15	General storm drainage/flooding projects	3	2	1	3	1	2.0
16	Specific storm drainage/flooding projects (non-critical facilities)	3	2	1	3	3	2.0
17	Critical facilities - storm drainage/flooding projects or relocation	3	3	1	3	3	2.6
18	Critical facilities - back up power projects	3	3	3	3	3	3.0
19	Critical facilities - other projects	3	3	3	3	3	3.0
20	Emergency notifications/communication/ traffic control	3	2	3	3	3	2.7
21	Stream or floodplain restoration/ stabilization projects	3	2	1	2	1	1.9
22	Work to minimize tree/electric line conflicts	3	3	2	3	3	2.8
23	Geotechnical/sinkhole evaluation (adopt construction standards, remediation)	3	3	3	2	2	2.7
24	Hazardous materials inventory/emergency planning, education, certification	3	3	1	3	2	2.5
25	Dam/levee projects	3	2	2	2	3	2.4
26	Specific bridge replacement or retrofits	2	2	1	3	3	2.1
27	Wildfire mitigation	3	2	1	2	1	1.9
28	Integrate hazard mitigation into local plans and ordinances	3	3	3	3	1	2.7

- Implementation schedule
- Implementation priority
- Effect of mitigation action on new or existing structures

The implementation of the specific mitigation actions identified in the municipal annexes is dependent on the approval of the local elected governing body and the ability of the municipality to obtain funding from local or outside sources. In general, mitigation actions ranked as high priority will be addressed first. However, medium or even low priority mitigation actions will be considered for concurrent implementation. Therefore, the ranking levels should be considered as a first-cut, preliminary ranking and will evolve based on prevailing priorities and decisions of local governments, the public, PEMA and FEMA as the 2018 Plan is implemented.

The county-level mitigation actions impact all the municipal mitigation actions in the form of encouragement, technical support and training as needed to accomplish the municipal objectives. In addition, Lehigh County, Northampton County and the Lehigh Valley Planning Commission have identified a variety of mitigation actions regarding the monitoring and maintenance of the hazard

mitigation plan, integration of hazard mitigation into county-level plans and specific projects to be implemented at the county level to enhance hazard mitigation and resiliency. The 59 projects at the county level (including one project that has eight sub-parts) are fully described in the county annex. These projects impact 13 of the regional mitigation actions as noted by the asterisks in the Municipal 2018 Action Plan Summary, most notably Action Number 4 regarding community outreach.

With the exception of the three new hazards and associated impacts on the region as identified in the Risk Assessment section of this Plan, overall plan priorities remain relatively unchanged from the previous plan. However, the Administrative Planning Team recognizes that a concerted effort is necessary to keep the momentum of the Plan going during the five-year plan update period. The county-level mitigation actions for the 2018 Plan include a greater emphasis on hazard mitigation priorities moving forward.

Without a strong commitment from county and local leaders, effective implementation of the Plan will not be successful. This 2018 Plan aims to ensure that participation, as well as monitoring and evaluation, continues throughout the five-year plan update period.

HAZARD MITIGATION PRIORITIES

1. Improve the integration of hazard mitigation planning into existing plans, policies and programs, especially related to infrastructure and capital improvements programming.
2. Identify more funding opportunities and improve the ability to compete for hazard mitigation project funding, in part by encouraging development of projects that are consistent with the funding guidelines of the Pennsylvania and Federal Emergency Management Agencies, especially with regard to cost-effectiveness.
3. Improve the thoroughness and consistency of hazard mitigation outreach to the public and business community through coordinated county and municipal efforts across varied media and social media platforms.
4. Begin implementation of the Community Rating System at the municipal level to strengthen a community's floodplain management program, resulting in the reduction of flood insurance rates for those properties located within flood prone areas.
5. Commit to annual monitoring and updating of the hazard mitigation plan, as necessary, to ensure plan effectiveness and currency.

Mitigation Action Successes

The key to successful hazard mitigation planning is implementation of mitigation actions, demonstrating progress in risk reduction. Since the 2013 Plan, a total of 124 actions have been completed by the municipalities.

The list of completed municipal actions is included in Table 6.4.4.

Flood-related actions were the primary types of actions completed in the region, which is not surprising since flooding is one of the highest ranked hazards in the Lehigh Valley. FEMA floodplain mapping for Northampton County went into effect in July 2014. To maintain compliance and remain in good standing with the National Flood Insurance Program, all 38 Northampton County communities adopted an updated floodplain ordinance to reflect the new mapping. A number of storm drainage/flooding projects (21) were completed, involving both critical and non-critical facilities. Six projects were completed that involved retrofitting structures or purchasing/relocating structures in flood-prone areas located in five municipalities. Six municipalities indicated that their Floodplain Administrator was certified.

In addition to flood-related projects, eight back-up power projects were completed for critical facilities in eight municipalities.

Lehigh and Northampton counties completed the countywide generator projects, providing grant administration and technical support as needed to municipalities awarded funding for generator projects. Lehigh County provided grant administration and technical support for the Lower Milford Township Creek Stabilization Project, which stabilized a section of the Hosensack Creek that was threatening Schultz Bridge Road near its intersection with Buchman Road. Northampton County completed its effort to join the National Oceanic and Atmospheric Administration (NOAA) StormReady program, which is designed to enhance a community's resilience to severe storms.

Table 6.4.4 Municipal Action Completions Summary

Regional Action Number	Action Description	Actions Completed
1	Retrofit structures in flood-prone areas	3
2	Purchase or relocate structures in hazard prone areas	3
3	Maintain compliance with and good standing in NFIP	38
4	Conduct and facilitate community and public outreach	2
5	Begin the process to adopt higher regulation of floodplains and carbonate bedrock areas	10
6	Determine if CAV or CAC visit is needed and schedule	5
7	Have designated Floodplain Administrator certified	6
8	Participate in the Community Rating System	0
9	Archive elevation certificates	1
10	Continue to support implementation and monitoring of plan	0
11	Develop/enhance Comprehensive Emergency Management Plans	4
12	Create/enhance/maintain mutual aid agreements	4
13	Improve post-disaster capabilities	3
14	Work with regional agencies to develop damage assessment data	2
15	General storm drainage/flooding projects	0
16	Specific storm drainage/flooding projects (non-critical facilities)	12
17	Critical facilities - storm drainage/flooding projects or relocation	9
18	Critical facilities - back up power projects	8
19	Critical facilities - other projects	2
20	Emergency notifications/communication/traffic control	2
21	Stream or floodplain restoration/stabilization projects	2
22	Work to minimize tree/electric line conflicts	1
23	Geotechnical/sinkhole evaluation (adopt construction stds, remediation)	1
24	Hazardous materials inventory/emergency planning, education, certification	0
25	Dam/levee projects	3
26	Specific bridge replacement or retrofits	3
27	Wildfire mitigation	0
28	Integrate hazard mitigation into local plans and ordinances	0
	TOTAL	124