

## Section 5. Mitigation Strategy

The intent of the Mitigation Strategy is to provide Cuyahoga County and its municipalities with the goals that will serve as the guiding principles for future mitigation policy and project administration, along with a list of proposed actions deemed necessary to meet those goals and reduce the impact of natural, technological, and man-made hazards. It is designed to be comprehensive and strategic in nature.

The development of the strategy included a thorough review of natural, technological, and man-made hazards and identified policies and projects intended to not only reduce the future impacts of hazards, but also to help the County achieve compatible economic, environmental and social goals. The development of this section is also intended to be strategic, in that all policies and projects are linked to establish priorities assigned to specific departments or individuals responsible for their implementation and assigned target completion deadlines. Funding sources are identified that can be used to assist in project implementation.

- **Mitigation goals** are general guidelines that explain what the County wants to achieve. Goals are usually expressed as broad policy statements representing desired long-term results.
- **Mitigation objectives** describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals; the described steps are usually measurable and can have a defined completion date.
- **Mitigation Actions** provide more detailed descriptions of specific work tasks to help the County and its municipalities achieve prescribed goals and objectives.

Based on participation from the Cuyahoga County Mitigation Planning Committee, the mitigation strategy was developed. Objectives were clarified to better document roles and responsibilities. Actions have been added to address particular hazards facing the County and the consensus achieved in how to address those actions.

The last step in updating the Mitigation Strategy is the creation Mitigation Action Plans (MAPs). The MAPs represent the key outcome of the mitigation planning process. MAPs include a prioritized list of proposed hazard mitigation actions (policies and projects) for the County, including accompanying information such as those agencies or individuals assigned responsibility for their implementation, potential funding sources, estimated target date for completion, and a current status. The MAPs provide those individuals or agencies responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring progress over time. The collection of actions listed in each jurisdictions MAP also serves as an easily understood synopsis of activities for local decision makers.

In order to ensure that a broad range of mitigation actions were considered, the Mitigation Planning Committee analyzed a comprehensive range of specific mitigation actions for each hazard after it had completed the risk assessment. This helped to ensure that there was sufficient span and creativity in the mitigation actions considered.

There are four categories of mitigation actions which the County considered in developing its mitigation action plan. Those categories include:

- **Local Plans and Regulations:** These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
- **Structure and Infrastructure Projects:** These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance program.
- **Natural Systems Protection:** These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.
- **Education and Awareness Program:** These are actions to inform and educate students, faculty and staff about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk among County officials, stakeholders, and the public is more likely to lead to direct actions.

### 5.1 2011 Mitigation Action Prioritization Methodology

The 2011 plan used the action prioritization methodology that was employed in the State of Ohio's Hazard Mitigation Plan:

Priority	Description
<b>A</b>	Projects or activities that permanently eliminate damages or deaths and injuries across the County from any hazard.
<b>B</b>	Projects or activities that reduce the probability of damages, deaths, and injuries across the County from any hazard.
<b>C</b>	Projects or activities that educate the public on the subjects of hazard mitigation, hazard research, and disaster preparedness.
<b>D</b>	Projects or activities that warn the public to approaching natural hazard threats.

Once the actions were organized based on the priority descriptions listed above, the Hazard Mitigation Core Group analyzed the resulting order. Referencing FEMA's Benefit Cost Review guide (386-5), each of the action's benefits and costs were reviewed by the Group to determine if the sequence of actions required further adjustment. This additional evaluation was of particular value in areas where two or more actions were categorized with the same priority letter under a given hazard. When this occurred, the Group collaboratively weighed the benefits and costs of actions similar in nature to further narrow down their prioritization.

## 5.2 2017 Plan Update Mitigation Action Prioritization Methodology

Prioritizing mitigation actions for this plan update was completed using FEMA's STAPLEE methodology for each jurisdiction's actions. The prioritization process has changed from the previous plan in order to incorporate this adaptable method that allows for a more comprehensive examination of the mitigation actions.

The STAPLEE approach allows for a careful review of the feasibility of mitigation actions by using seven criteria. The criteria are described below:

- *S - Social*
- *T - Technical*
- *A - Administrative*
- *P - Political*
- *L - Legal*
- *E - Economic*
- *E - Environmental*

FEMA mitigation planning requirements indicate that any prioritization system used shall include a special emphasis on the extent to which benefits are maximized according to a cost-benefit review of the proposed projects. To do this in an efficient manner that is consistent with FEMA's guidance on using cost-benefit review in mitigation planning, the STAPLEE method was adapted to include a higher weighting for two elements of the economic feasibility factor – Benefits of Action and Costs of Action. This method incorporates concepts similar to those described in Method C of FEMA 386-5: Using Benefit Cost Review in Mitigation Planning (FEMA, 2007).

For the individual action plans, a STAPLEE score was calculated based on the number of favorable considerations that can be found on the STAPLEE document. Up to 23 considerations can be used to prioritize each action using this evaluation methodology.

Typically, scores rank between 17 and 21. Infrastructure projects tend to incur a lower score due to their high price and lengthy completion times, while actions such as plans, regulations, and educational programs rank higher due to their ease of deployment. The table below shows an example of the STAPLEE tool.

STAPLEE ACTION EVALUATION TABLE:																							
Alternative Actions	STAPLEE Criteria Considerations																						
	+ Favorable      - Less favorable      N Not Applicable																						
	S (Social)		T (Technical)			A (Administrative)		P (Political)		L (Legal)		E (Economic)			E (Environmental)								
	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/ Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws

Figure 5-1 Example STAPLEE tool

### 5.3 Planning Process for Setting Hazard Mitigation Goals and Objectives

The mitigation strategy represents the key outcomes of the 2017 Cuyahoga County HMP planning process. The hazard mitigation planning process conducted by the Planning Committee is a typical problem-solving methodology:

- Estimate the impacts the problem could cause;
- Describe the problem;
- Assess what safeguards and resources exist that could potentially lessen those impacts;
- Develop Goals and Objectives with current capabilities to address problem
- Using this information, determine what, if anything, can be done, and select those actions that are appropriate for the community

### 5.4 Cuyahoga County Capability Assessment

The mitigation strategy includes an assessment of Cuyahoga County planning and regulatory, administrative/technical, fiscal, and political capabilities to augment known issues and weaknesses from identified natural, technological, and man-made hazards.

With the adoption of this plan, all existing capabilities will be expanded upon to account for mitigation.

Tool/Program	Jurisdictions with this resource, or in process of developing this resource
<b>Hazard Mitigation Plan</b>	Cuyahoga County, Bay Village, Beachwood, Bedford, Bedford Heights, Bentleyville, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, East Cleveland, Euclid, Fairview Park, Garfield Heights, Gates Mills, Glenwillow, Highland Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Linndale, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Randall, North Royalton, Oakwood, Olmsted Falls,

	Olmsted Township, Orange, Parma, Parma Heights, Pepper Pike, Rocky River, Richmond Heights, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Warrensville Heights, Westlake
<b><i>Emergency Operations Plan</i></b>	Cuyahoga County, Bay Village, Beachwood, Bedford Heights, Berea, Bentleyville, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Euclid, Fairview Park, Garfield Heights, Glenwillow, Highland Heights, Hunting Valley, Independence, Lakewood, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Randall, North Royalton, Olmsted Falls, Olmsted Township, Parma, Parma Heights, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Westlake
<b><i>Disaster Recovery Plan</i></b>	Cuyahoga County, Bay Village, Bentleyville, Bratenahl, Brooklyn, Brook Park, Cleveland Heights, Garfield Heights, Highland Heights, Hunting Valley, Independence, Lakewood, Maple Heights, Mayfield, Middleburg Heights, Oakwood, Olmsted Falls, Olmsted Township, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Solon, South Euclid, Valley View, Walton Hills, Westlake
<b><i>Evacuation Plan</i></b>	Cuyahoga County, Bay Village, Bentleyville, Berea, Bratenahl, Brecksville, Brooklyn, Cleveland, Cleveland Heights, Brooklyn Heights, Fairview Park, Garfield Heights, Hunting Valley, Lakewood, Maple Heights, Mayfield, North Royalton, Oakwood, Olmsted Falls, Olmsted Township, Orange, Parma, South Euclid, Valley View, Walton Hills, Westlake
<b><i>Continuity of Operations Plan</i></b>	Cuyahoga County, Berea, Brooklyn Heights, Brooklyn, Chagrin Falls, Cleveland Heights, Euclid, Garfield Heights, Hunting Valley, Independence, Lakewood, Maple Heights, Mayfield, Middleburg Heights, Pepper Pike, Richmond Heights, Solon, South Euclid, University Heights, Valley View, Westlake
<b><i>NFIP</i></b>	Bay Village, Beachwood, Bedford, Bedford Heights, Berea, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Euclid, Fairview Park, Garfield Heights, Highland Heights, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, North Olmsted, North Royalton, Oakwood, Parma, Parma Heights, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Warrensville Heights, Westlake, Bentleyville, Bratenahl, Glenwillow, Orange, Cuyahoga County, Cuyahoga Heights, Gates Mills, Olmsted Falls, Rocky River, Walton Hills
<b><i>NFIP-CRS</i></b>	Highland Heights, Orange, South Euclid
<b><i>Floodplain Regulations</i></b>	Bay Village, Beachwood, Bedford, Bedford Heights, Berea, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Euclid, Fairview Park, Garfield Heights, Highland Heights, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, North Olmsted, North Royalton, Oakwood, Parma, Parma Heights, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Warrensville Heights, Westlake, Bentleyville, Bratenahl, Glenwillow, Orange, Cuyahoga County, Cuyahoga Heights, Gates Mills, Olmsted Falls, Rocky River, Walton Hills
<b><i>Floodplain Management Plan</i></b>	Bay Village, Bentleyville, Bratenahl, Broadview Heights, Brooklyn, Brooklyn Heights, Cleveland Heights, Garfield Heights, Garfield Heights, Glenwillow, Highland Heights, Hunting Valley, Independence, Lakewood, Lyndhurst,

	Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Olmsted Falls, Orange, Parma, Pepper Pike, Richmond Heights, Seven Hills, Solon, South Euclid, Strongsville, Westlake
<b><i>Zoning Regulations</i></b>	Cuyahoga County, Bay Village, Beachwood, Bedford Heights, Bentleyville, Bedford, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Euclid, Garfield Heights, Gates Mills, Glenwillow, Highland Heights, Hunting Valley, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Olmsted Falls, Orange, Oakwood, Parma, Parma Heights, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Westlake
<b><i>Subdivision Regulations</i></b>	Cuyahoga County, Bay Village, Bedford Heights, Bentleyville, Bratenahl, Broadview Heights, Brooklyn, Brooklyn Heights, Chagrin Falls, Cleveland Heights, Euclid, Garfield Heights, Gates Mills, Glenwillow, Hunting Valley, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Oakwood, Olmsted Falls, Orange, Parma, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, Solon, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Westlake
<b><i>Comprehensive Land Use Plan (or General, Master or Growth Mgmt. Plan)</i></b>	Cuyahoga County, Bay Village, Beachwood, Bedford Heights, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Euclid, Garfield Heights, Highland Heights, Hunting Valley, Independence, Lakewood, Maple Heights, Mayfield Heights, Mayfield, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Oakwood, Olmsted Township, Orange, Parma, Parma Heights, Pepper Pike, Richmond Heights, Seven Hills, Solon, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Westlake Woodmere
<b><i>Open Space Management Plan (or Parks/Rec or Greenways Plan)</i></b>	Cuyahoga County, Bay Village, Berea, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Cleveland, Cleveland Heights, Euclid, Highland Heights, Hunting Valley, Lakewood, Maple Heights, Mayfield Heights, Mayfield, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Parma, South Euclid, Strongsville, University Heights, Walton Hills, Westlake
<b><i>Stormwater Management Plan / Ordinance</i></b>	Cuyahoga County, Bay Village, Beachwood, Bedford, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Chagrin Falls, Cleveland Heights, Cuyahoga Heights, Euclid, Garfield Heights, Gates Mills, Highland Heights, Independence, Lakewood, Lyndhurst, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Olmsted Falls, Olmsted Township, Olmsted Township, Orange, Parma, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, Shaker Heights, South Euclid, Strongsville, Westlake, Woodmere
<b><i>Natural Resource Protection Plan</i></b>	Brooklyn, Brooklyn Heights, Euclid, Mayfield Heights, Lakewood, Mayfield, Moreland Hills, Newburgh Heights, North Olmsted, Parma, Pepper Pike, Richmond Heights, Strongsville, Westlake
<b><i>Capital Improvement Plan</i></b>	Beachwood, Berea, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Euclid, Garfield Heights, Highland Heights, Hunting Valley, Independence, Lakewood, Lyndhurst, Mayfield, Middleburg Heights, Newburgh Heights, North Olmsted, North Royalton, Oakwood, Olmsted Township, Parma, Pepper Pike, Richmond Heights, Seven Hills, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Westlake, Woodmere



<b><i>Economic Development Plan</i></b>	Cuyahoga County, Beachwood, Bedford, Berea, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Cleveland, Cleveland Heights, Euclid, Garfield Heights, Highland Heights, Independence, Lakewood, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Newburgh Heights, North Randall, North Royalton, Oakwood, Olmsted Township, Parma, Shaker Heights, South Euclid, Strongsville, Walton Hills
<b><i>Historic Preservation Plan</i></b>	Berea, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Chagrin Falls, Cleveland, Cleveland Heights, Euclid, Highland Heights, Hunting Valley, Lakewood, Mayfield, Middleburg Heights, Newburgh Heights, North Olmsted, Parma, Strongsville
<b><i>Farmland Preservation</i></b>	Brooklyn, Brooklyn Heights, Middleburg Heights, Newburgh Heights, Parma, Strongsville
<b><i>Building Code</i></b>	Cuyahoga County, Bay Village, Beachwood, Bedford, Bedford Heights, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, East Cleveland, Euclid, Fairview Park, Garfield Heights, Gates Mills, Highland Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Oakwood, Olmsted Falls, Olmsted Township, Orange, Parma, Parma Heights, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Westlake, Woodmere
<b><i>Fire Code</i></b>	Cuyahoga County, Bay Village, Beachwood, Bedford, Bedford Heights, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, East Cleveland, Euclid, Fairview Park, Garfield Heights, Gates Mills, Highland Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Randall, North Royalton, Oakwood, Olmsted Falls, Olmsted Township, Orange, Parma, Parma Heights, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Westlake, Woodmere

#### 5.4.1 Administrative and Technical Capabilities

Table 5-1 provides a summary of administrative and technical capabilities organized by staff type and department. It is important to understand current administrative and technical capabilities before developing a myriad of mitigation activities.

Table 5-1 Administrative and Technical Mitigation Capabilities

Staff/Personnel Resources	Department / Agency
<b><i>Planners (with land use / land development knowledge)</i></b>	Cuyahoga County, Bay Village, Bedford, Bentleyville, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Euclid, Fairview Park, Garfield Heights, Glenwillow, Highland Hills, Hunting Valley, Independence, Lakewood, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Randall, North Royalton, Olmsted Township, Orange, Oakwood, Parma, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Woodmere, Westlake

<b><i>Planners or engineers (with natural and/or human caused hazards knowledge)</i></b>	Cuyahoga County, Bay Village, Bedford, Bentleyville, Berea, Bratenahl, Broadview Heights, Brooklyn, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Fairview Park, Garfield Heights, Glenwillow, Highland Hills, Hunting Valley, Independence, Lakewood, Lyndhurst, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, North Olmsted, North Royalton, Oakwood, Olmsted Falls, Olmsted Township, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Solon, University Heights, Valley View, Westlake
<b><i>Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)</i></b>	Cuyahoga County, Bay Village, Bedford, Bedford Heights, Beachwood, Bentleyville, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cuyahoga Heights, Fairview Park, Garfield Heights, Gates Mills, Glenwillow, Highland Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Olmsted Falls, Olmsted Township, Orange, Parma, Parma Heights, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Woodmere, Westlake
<b><i>Emergency manager</i></b>	Cuyahoga County, Bay Village, Bedford, Beachwood, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Euclid, Fairview Park, Garfield Heights, Glenwillow, Highland Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, North Olmsted, North Royalton, Oakwood, Olmsted Township, Parma, Parma Heights, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Woodmere, Westlake
<b><i>Floodplain manager</i></b>	Cuyahoga County, Bay Village, Beachwood, Bedford, Bentleyville, Berea, Bratenahl, Brecksville, Brooklyn Heights, Chagrin Falls, Cuyahoga Heights, Garfield Heights, Highland Heights, Highland Hills, Independence, Lakewood, Lyndhurst, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, North Olmsted, North Royalton, Olmsted Falls, Orange, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Strongsville, Valley View, Woodmere, Westlake
<b><i>Land surveyors</i></b>	Bay Village, Bentleyville, Bratenahl, Brecksville, Broadview Heights, Brooklyn Heights, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Lyndhurst, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, Oakwood, Olmsted Falls, Olmsted Township, Orange, Parma Heights, Pepper Pike, Richmond Heights, Rocky River, Seven Hills, South Euclid, University Heights, Valley View, Woodmere
<b><i>Scientists or staff familiar with the hazards of the community</i></b>	Cuyahoga County, Bentleyville, Bratenahl, Brooklyn Heights, Cleveland, Independence, Lyndhurst, Mayfield, Moreland Hills, Oakwood, Olmsted Falls, Orange, Parma, Pepper Pike, Richmond Heights, University Heights, Walton Hills, Woodmere, Westlake



<b><i>Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program</i></b>	Cuyahoga County, Bay Village, Bentleyville, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn Heights, Chagrin Falls, Cleveland, Cleveland Heights, Garfield Heights, Glenwillow, Highland Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Lyndhurst, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, Newburgh Heights, Olmsted Falls, Olmsted Township, Pepper Pike, Solon, South Euclid, Strongsville, University Heights, Woodmere, Westlake
<b><i>Grant writers or fiscal staff to handle large/complex grants</i></b>	Cuyahoga County, Bentleyville, Bratenahl, Brecksville, Broadview Heights, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Euclid, Fairview Park, Garfield Heights, Glenwillow, Highland Hills, Independence, Lakewood, Lyndhurst, Maple Heights, Mayfield Heights, Mayfield, Moreland Hills, Newburgh Heights, North Olmsted, North Randall, North Royalton, Oakwood, Olmsted Falls, Olmsted Township, Orange, Parma, Pepper Pike, Richmond Heights, Seven Hills, South Euclid, Strongsville, University Heights, Walton Hills, Woodmere, Westlake

#### 5.4.2 Fiscal Capabilities

This section identifies the financial tools or resources that Cuyahoga County could potentially use to help fund mitigation activities. Fiscal capabilities include community-specific as well as state and federal resources.

Table 5-2 Fiscal Capabilities Table

Financial Resources	Department / Agency
<b><i>Capital improvement programming</i></b>	Cuyahoga County, Beachwood, Bentleyville, Berea, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Chagrin Falls, Cleveland, Cleveland Heights, Cuyahoga Heights, Garfield Heights, Highland Heights, Highland Hills, Hunting Valley, Independence, Lakewood, Mayfield, Middleburg Heights, Newburgh Heights, North Olmsted, North Randall, Oakwood, Olmsted Township, Parma, Pepper Pike, Richmond Heights, Seven Hills, South Euclid, Strongsville, University Heights, Valley View, Walton Hills, Warrensville Heights, Westlake
<b><i>Community Development Block Grants (CDBG)</i></b>	Cuyahoga County, Bedford Heights, Berea, Broadview Heights, Brooklyn, Brooklyn Heights, Brook Park, Cleveland, Cleveland Heights, East Cleveland, Euclid, Garfield Heights, Highland Heights, Highland Hills, Independence, Lakewood, Mayfield Heights, Middleburg Heights, Oakwood, Olmsted Township, Parma, Parma Heights, Richmond Heights, Seven Hills, Shaker Heights, South Euclid, Woodmere, Warrensville Heights
<b><i>Special purpose taxes</i></b>	Cuyahoga County, Bentleyville, Broadview Heights, Brooklyn, Brooklyn Heights, Cleveland, Cleveland Heights, Highland Heights, Lakewood, Middleburg Heights, North Olmsted, North Royalton, Oakwood, Olmsted Falls, Olmsted Township, Parma, Pepper Pike, Richmond Heights, Seven Hills, South Euclid, Strongsville, Walton Hills, Woodmere
<b><i>Gas / electric utility fees</i></b>	Bratenahl, Broadview Heights, Brooklyn, Cleveland, Fairview Park, Garfield Heights, Lakewood, Olmsted Township, Seven Hills, South Euclid, University Heights, Woodmere
<b><i>Water / sewer fees</i></b>	Cuyahoga County, Beachwood, Bedford, Bedford Heights, Berea, Brecksville, Broadview Heights, Brooklyn, Chagrin Falls, Cleveland, Cleveland Heights, Euclid, Fairview Park, Garfield Heights, Lakewood, Lyndhurst, Middleburg Heights, Moreland

	Hills, North Olmsted, North Royalton, Olmsted Township, Pepper Pike, Seven Hills, South Euclid, Strongsville, Woodmere, Westlake
<b>Stormwater utility fees</b>	Cuyahoga County, Beachwood, Bedford, Berea, Brecksville, Broadview Heights, Brooklyn, Cleveland Heights, Cuyahoga Heights, Fairview Park, Highland Heights, Highland Hills, Lakewood, Lyndhurst, Mayfield Heights, Middleburg Heights, North Olmsted, North Royalton, Olmsted Township, Pepper Pike, Seven Hills, South Euclid, Strongsville, Valley View, Warrensville Heights,
<b>Development impact fees</b>	Broadview Heights, Brooklyn, Chagrin Falls, North Royalton, Olmsted Falls, Oakwood, Olmsted Township, Seven Hills, South Euclid, Strongsville, University Heights, Walton Hills, Westlake
<b>General obligation, revenue, and/or special tax bonds</b>	Bedford Heights, Bentleyville, Berea, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Cleveland, Cleveland Heights, Fairview Park, Highland Heights, Highland Hills, Independence, Lakewood, Mayfield Heights, Mayfield, Middleburg Heights, Moreland Hills, North Olmsted, Olmsted Falls, Oakwood, Olmsted Township, Parma, Pepper Pike, Richmond Heights, Seven Hills, Solon, South Euclid, Strongsville, University Heights, Walton Hills, Woodmere, Warrensville Heights, Westlake
<b>Partnering arrangements or intergovernmental agreements</b>	Cuyahoga County, Bratenahl, Brecksville, Broadview Heights, Brooklyn, Brooklyn Heights, Chagrin Falls, Cleveland Heights, Euclid, Garfield Heights, Highland Hills, Independence, Lakewood, Middleburg Heights, Newburgh Heights, North Olmsted, North Royalton, Oakwood, Olmsted Falls, Olmsted Township, Parma, Pepper Pike, Richmond Heights, Seven Hills, South Euclid, Strongsville, University Heights, Walton Hills, Woodmere, Westlake

#### 5.4.3 Education and Outreach

This section identifies the education and outreach tools or resources that Cuyahoga County could potentially use. These capabilities include community-specific as well as state and federal resources.

Table 5-3 Education and Outreach Table

Financial Resources	Department / Agency
<b>Firewise Communities Certification</b>	Cuyahoga County, Brooklyn, Parma, Rocky River, Westlake,
<b>StormReady Certification</b>	Cuyahoga County, Mayfield Heights, Parma, Seven Hills, Westlake
<b>Natural disaster or safety related school programs</b>	Berea, Brooklyn, Cleveland Heights, Gates Mills, Independence, Lakewood, Mayfield, Newburgh Heights, Pepper Pike, South Euclid, Woodmere

<b><i>Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)</i></b>	Beachwood, Berea, Brooklyn, Cleveland, Cleveland Heights, Gates Mills, Highland Heights, Independence, Lakewood, Maple Heights, Mayfield, Newburgh Heights, Pepper Pike, South Euclid, Strongsville, Woodmere
<b><i>Public-private partnership initiatives addressing disaster- related issues</i></b>	Berea, Brooklyn, Highland Heights, Independence, Richmond Heights, Strongsville, Woodmere
<b><i>Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.</i></b>	Brooklyn, Cleveland, Cleveland Heights, Highland Heights, Independence, Maple Heights, Mayfield, Pepper Pike, Richmond Heights, South Euclid, Strongsville, Woodmere

#### 5.4.4 Degree of Capability

Financial Resources	Degree of Capability		
	Limited	Moderate	High
<b><i>Planning and Regulatory</i></b>	Bedford Heights, Brooklyn, East Cleveland, Euclid, Fairview Park, Gates Mills, Hunting Valley, Linndale, Lyndhurst, Maple Heights, Mayfield Heights, Middleburg Heights, Newburgh Heights, Orange, Rocky River	Beachwood, Bedford, Berea, Broadview Heights, Brook Park, Cleveland Heights, Cuyahoga Heights, Garfield Heights, Glenwillow, Highland Heights, Highland Hills, Lakewood, Mayfield, North Olmsted, North Randall, Olmsted Township, Parma, Parma Heights, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Solon, South Euclid, Strongsville, Valley View, Woodmere	Cuyahoga County, Bentleyville, Bratenahl, Brecksville, Brooklyn Heights, Chagrin Falls, Cleveland, Independence, Moreland Hills, North Royalton, Oakwood, Olmsted Falls, University Heights, Warrensville Heights, Westlake
<b><i>Administrative and Technical</i></b>	Bedford Heights, Brooklyn, East Cleveland, Euclid, Fairview Park, Gates Mills, Hunting Valley, Linndale, Maple Heights, Middleburg Heights, Newburgh Heights, Olmsted Township, Orange, Parma Heights, Rocky River	Beachwood, Bedford, Berea, Bratenahl, Brecksville, Broadview Heights, Brook Park, Cuyahoga Heights, Highland Heights, Highland Hills, Garfield Heights, Hunting Valley, Lakewood, Lyndhurst, Mayfield Heights, North Olmsted, North Randall, North Royalton, Olmsted Falls, Parma, Pepper Pike, Richmond Heights, Seven Hills, Shaker Heights, Solon, South	Cuyahoga County, Bentleyville, Brecksville, Brooklyn Heights, Chagrin Falls, Cleveland, Cleveland Heights, Glenwillow, Independence, Mayfield, Moreland Hills, Oakwood, Strongsville, University Heights, Walton Hills, Warrensville Heights, Westlake

		Euclid, Valley View, Woodmere	
<b>Financial</b>	Bedford Heights, Brooklyn, East Cleveland, Euclid, Fairview Park, Garfield Heights, Gates Mills, Linndale, Lyndhurst, Maple Heights, Middleburg Heights, Newburgh Heights, North Royalton, Olmsted Township, Orange, Parma Heights, Richmond Heights, Rocky River, Seven Hills	Beachwood, Bedford, Berea, Bratenahl, Broadview Heights, Brook Park, Brooklyn Heights, Chagrin Falls, Cuyahoga Heights, Highland Hills, Hunting Valley, Lakewood, Lyndhurst, Mayfield Heights, North Olmsted, North Randall, Oakwood, Olmsted Falls, Parma, Pepper Pike, Shaker Heights, Solon, Valley View, Woodmere, Westlake	Cuyahoga County, Bentleyville, Cleveland, Cleveland Heights, Glenwillow, Highland Heights, Independence, Mayfield, Moreland Hills, South Euclid, Strongsville, University Heights, Warrensville Heights,
<b>Community Political Capabilities</b>	Bedford Heights, Brooklyn, East Cleveland, Euclid, Fairview Park, Linndale, Maple Heights, Mayfield Heights, Middleburg Heights, Newburgh Heights, Richmond Heights, Rocky River	Cuyahoga County, Bedford, Bratenahl, Broadview Heights, Brook Park, Cuyahoga Heights, Glenwillow, Highland Hills, Hunting Valley, Lakewood, North Randall, North Royalton, Olmsted Township, Parma, Parma Heights, Pepper Pike, Seven Hills, Shaker Heights, Solon, Valley View, Walton Hills, Westlake	Bentleyville, Brecksville, Brooklyn Heights, Chagrin Falls, Cleveland, Garfield Heights, Independence, Moreland Hills, Olmsted Falls, University Heights, Warrensville Heights,
<b>Education and Outreach</b>	Bedford Heights, Brooklyn, East Cleveland, Euclid, Chagrin Falls, Fairview Park, Gates Mills, Linndale, Maple Heights, Middleburg Heights, Newburgh Heights, Parma Heights, Rocky River, Seven Hills	Beachwood, Bedford, Bentleyville, Bratenahl, Broadview Heights, Brook Park, Cleveland Heights, Cuyahoga Heights, Garfield Heights, Glenwillow, Highland Hills, Hunting Valley, Lakewood, Lyndhurst, Mayfield Heights, Moreland Hills, North Olmsted, North Randall, Oakwood, Olmsted Falls, Orange, North Royalton, Olmsted Township, Parma, Pepper Pike, Richmond Heights, Shaker Heights, Solon, Strongsville, Valley View, Walton Hills	Cuyahoga County, Berea, Brecksville, Cleveland, Brooklyn Heights, Highland Heights, Independence, Mayfield, South Euclid, University Heights, Warrensville Heights, Woodmere, Westlake

#### **5.4.5 Ability to Expand on Existing Capabilities**

The planning process used surveys to determine the existing capabilities for the County and its political subdivisions. Actual capability assessments can be found in Appendix D. These capabilities can be expanded upon with the proper influx of funds or personnel. Should additional state or federal funding become available to specifically augment existing capabilities, then the jurisdictions represented in this plan would be able to improve their capabilities. Additionally, as personnel turn over, they may be replaced with individuals with skillsets not captured in these surveys. The County will continue to develop their capabilities over time, and expand upon them where they are able.

### **5.5 Mitigation Goals, Objectives and Actions**

Goals and objectives discussed in this section help describe what actions should occur, using increasingly narrow descriptors. Long-term goals are developed which can be accomplished by objectives. To achieve the stated objectives “mitigation actions” provide specific measurable descriptors on how to accomplish the objective. The goals, objectives, and actions form the basis for the development of a Mitigation Action Strategy and specific mitigation projects to be considered for implementation.

The process consists of 1) setting goals and objectives, 2) considering mitigation alternatives, 3) identifying strategies or “actions”, and 4) developing a prioritized action plan resulting in a mitigation strategy.

#### **5.5.1 Goals and Objectives**

The Planning Committee discussed goals and objectives for this plan at distinct points in the planning process. On May 24, 2016 (Planning Committee Meeting #2), the Planning Committee discussed the results of the risk assessment and the identified issues/weaknesses to be addressed by the Mitigation Goals and Objectives. More details of this particular meeting are provided in Appendix B. The following goals and objectives have been developed as part the planning effort:

- 1. To coordinate efforts regulating the 100-year floodplains and to learn from each other how each community applies and enforces their regulations.**
  - a. Conduct cross-jurisdictional meetings to discuss floodplain regulations.
- 2. Protect the people, property, and infrastructure of Cuyahoga County from the effects of flooding.**
  - a. Undertake public education and outreach programs.
  - b. Undertake planning initiatives to protect the residents of Cuyahoga County from the risks of flooding.
  - c. Undertake structural improvements to reduce flood risk.
- 3. Increase public awareness of the potential dangers of coastal flooding and erosion.**
  - a. Conduct public education and outreach programs related to the risks of coastal flooding.
- 4. To increase educational awareness of coastal and streambank erosion in the communities affected, as well as to learn about different techniques communities are using to control erosion.**



- a. Conduct public education and outreach programs related to the risks of coastal erosion.
- 5. Increase public awareness of temperature extremes, as well as the measures that can be taken to ensure safety during extreme temperature events.**
  - a. Conduct public education and outreach campaign related to the risks of temperature extremes.
  - b. Undertake a planning initiative that reduces the risks of temperature extremes on residents
  - c. Implementation of projects meant to reduce the effects of temperature extremes.
- 6. To mitigate the effects of severe winter weather by increasing awareness of the dangers associated with winter storms.**
  - a. Implement public education and outreach programs meant to help prepare the citizens of Cuyahoga County for the potential impacts of severe winter weather.
- 7. To reduce potential damage resulting from geologic hazards and to increase public awareness of the hazard.**
  - a. Implement public education and outreach programs meant to help prepare the citizens of Cuyahoga County for the potential impacts of severe winter weather.
- 8. To reduce potential damage of droughts by increasing public awareness.**
  - a. Provide education materials to citizens in learning about their drought risk in Cuyahoga County.
- 9. Reduce the impact of tornadoes.**
  - a. Identify and evaluate potential structural projects designed to protect the citizens of Cuyahoga County from the effects of tornadoes.
  - b. Increase public awareness about the effects of tornadoes and how to respond to warning signs.
- 10. Reduce morbidity and mortality related to health-related events**
  - a. Educate the public about disease entities
  - b. Equip and train responders through ongoing opportunities and grants programs
  - c. Ensure communications plans are completed and tested so that the public has information to assist with maintaining community wellness.
- 11. Lessen the effects of severe thunderstorms on Cuyahoga County**
  - a. Promote public awareness of the dangers of thunderstorms and their effects
  - b. Plan and execute structural projects meant to reduce vulnerability of the County to the effects of thunderstorms and their secondary hazards.
- 12. Increase preparedness and response capabilities of Cuyahoga County as they relate to Terrorism/CBRNE incidents**
  - a. Undertake planning initiatives meant to prepare the County to respond to terrorism/CBRNE incidents.
  - b. Communicate potential risks to the public as they relate to terrorism/CBRNE incidents.
- 13. Take steps to avoid losses resulting from building/structural collapses in Cuyahoga County**

- a. Identify and remove potential nuisance structures in Cuyahoga County
  - b. Communicate the risks of potential dangers associated with nuisance/hazard structures
  - c. Provide training meant to enhance the County's ability to respond to building/structural collapse.
- 14. Lessen the impact to the functions and people of Cuyahoga County relative to utility disruptions**
- a. Inform the public to report suspicious activity near generators
  - b. Develop redundant power system meant to maintain critical services in the event of a utility disruption
  - c. Raise public awareness as it related to the effects of utility disruption.
- 15. Develop capabilities to counter IT/Communications disruptions in Cuyahoga County**
- a. Develop redundant systems to ensure the County's capability to maintain critical services in the event of an IT/Communications disruption
- 16. Develop training and outreach strategies meant to address the threat of active shooter incidents in Cuyahoga County.**
- a. Ready local response agencies for active shooter incidents through planning and training initiatives
  - b. Inform the public about potential steps to take should they encounter an active shooter scenario
- 17. Enhance the County's ability to respond to and recover from mass transportation incidents**
- a. Undertake planning initiatives to prepare for potential mass transportation incidents
  - b. Educate the public to the potential risks from mass transportation incidents
- 18. Ensure Cuyahoga County is prepared for potential hazardous materials incidents.**
- a. Increase the County's ability to respond to hazmat incidents (planning/training)
  - b. Improve the public's knowledge of hazmat incidents and the appropriate steps to take should one occur
- 19. Develop protocols meant to lessen the potential impacts of dam failures in Cuyahoga County**
- a. Coordinate with the ODNR to encourage dam owners to develop and implement EAPs
  - b. Make the public aware of the potential risks associated with dam failure
- 20. Develop additional capabilities within Cuyahoga County as they relate to civil disturbance events.**
- a. Provide training meant to enhance response agency's abilities to respond to civil disturbance events
  - b. Conduct public outreach meant to raise awareness of events that could be viewed as civil disturbances
- 21. Plan for the potential impacts of a nuclear power incident impacting Cuyahoga County.**

- a. Develop and enhance plans and protocols as they relate to nuclear power incidents and the resulting impacts
- b. Take steps to educate the public about their potential exposure to nuclear power incidents

#### **5.5.2 2011 Mitigation Action Review**

During the third planning meeting, the mitigation actions from the 2011 HMP were reviewed and determined to be; deferred into the new plan, changed to reflect an update in priorities, completed, or deleted. These actions can be found in Table 5-3. Actions marked as “Completed” were finished between the drafting of the 2011 HMP, and the 2017 HMP. Deletion of an action generally refers to that action no longer being relevant to the community. The 2011 actions were very County-centric. Virtually no actions were developed for the individual jurisdictions within Cuyahoga County.

“Deferred” actions are those that the communities still feel are relevant, even though they have not been completed. These have been carried over into the mitigation strategy.

Table 5-3 Status of 2011 Mitigation Actions

ACTION	STATUS				STATUS UPDATE NOTES  What was accomplished for this action during this reporting period? What obstacles, problems, or delays were encountered? If not completed, is the action still relevant? Should the action and/or the anticipated completion date be revised? Do you have any other comments?
	Completed	Canceled	Deferred	Ongoing	
Produce/distribute family and traveler emergency preparedness information relating to severe winter weather hazards.	X				CCOEM has developed and disseminated "At-A-Glance" fact sheets to the public related to family and traveler severe winter weather emergency preparedness information
Develop Social Media programs to provide severe weather preparedness information to citizens.	X				CCOEM has implemented and maintains Facebook and Twitter accounts that, among other things, are used to disseminate severe weather and preparedness information to the public.
Evaluate a program to install stream gauges in creeks and tributaries that cause flooding in areas not considered to be in the 100 year flood zone.			X		Pending funding availability
Develop Social Media programs to provide weather information to citizens.	X				CCOEM has implemented and maintains Facebook and Twitter accounts that, among other things, are used to disseminate severe weather and preparedness information to the public.
Identify funding to purchase Preliminary Damage Assessment (PDA) Field Guides to disseminate among first responders.			X		Pending funding availability
Develop outreach educating citizens on the responsibility of tree maintenance and removal with regard to power outages caused by severe weather.			X		Pending funding availability
There is generally a lack of awareness as it relates to non-flood zone flooding in the County. Develop initiatives/PSAs to educate residents.				X	The Cuyahoga County Office of Emergency Management disseminates literature on hazards at various events (e.g. community fairs and homedays)
Evaluate and implement USGS program that incorporates additional stream gauges with historical data to develop web based interactive flood-inundation maps.			X		Pending funding availability
Develop strategic outreach to promote a program for regional NWS Sky Warn classes to educate identified community/voluntary organizations (e.g. Neighborhood Watch, CERT, etc.).				X	Working with the NWS, the Cuyahoga County Office of Emergency Management developed an outreach program to promote regional Sky Warn classes to educate identified community/voluntary organizations.

Develop partnerships to enhance stormwater regulations countywide.				X	The NEORSD Stormwater Management Program develops regional partnerships to address problems of this nature that cross community borders. Ongoing efforts of the Cuyahoga County Soil and Water Conservation District also contribute to this action.
Work with established watershed groups to evaluate causes of erosion and seek funding to create an action plan to reduce it.				X	The NEORSD Stormwater Management Program develops regional partnerships to address problems of this nature that cross community borders. Ongoing efforts of the Cuyahoga County Soil and Water Conservation District also contribute to this action.
Map critical facilities within the County.				X	The mapping of critical facilities is an ongoing effort in Cuyahoga County.
Disseminate model ordinances addressing streambank erosion to establish increased continuity among communities.				X	CRWP in conjunction with local and state agencies has developed a number of model ordinances/regulations and resolutions for communities to use.
Develop and implement an outreach strategy targeting communities in the County that have repetitive loss properties.			X		Pending funding availability
Seek funding to develop a countywide public notification/warning system. Identify most appropriate type of system, whether in the form of siren, reverse 9-1-1, social media, or other mode.	X				CRWP in conjunction with local and state agencies has developed a number of model ordinances/regulations and resolutions for communities to use.
Develop outreach for school aged children in the form of PSA's or other innovative connection to educate them on the dangers of flash floods.				X	Cuyahoga County Office of Emergency Management staff regularly attends school events and community home days throughout the County to disseminate safety and preparedness literature. Additional materials specific to flash flood safety will be sought for future events.
Develop outreach to educate citizens on the importance of having a NOAA weather radio at home and work.	X				CCOEM has developed and disseminated "At-A-Glance" fact sheets to the public emphasizing the importance of NOAA weather radios.
Develop PSA's about countywide public notification/warning system.	X				Develop PSA's about countywide public notification/warning system.
Seek funding to install diversion devices on roadways prone to flash flooding throughout the County. The devices would be intended to either dissuade or inhibit drivers from attempting to navigate flooded roadways.			X		Pending funding availability
Identify populations vulnerable to temperature extremes and organize outreach regarding temperature extreme safety and accessible heating or cooling centers in the communities.	X				Completed: GIS layers have been developed for vulnerable populations and outreach materials are disseminated via multi modes.



The undersized infrastructure is unable to handle the stormwater in some areas of the County. Seek funding to replace inadequate undersized infrastructure.				X	Through the Stormwater Management Program, NEORSRD identifies infrastructure concerns and seeks to work with communities to remedy them. Also, based on community survey responses, many jurisdictions reported activities that they have undertaken to mitigate problematic areas related to stormwater.
There are infrastructure issues relating to roadways falling in, debris, redirecting traffic, and clean-up. Seek funding to permanently mitigate infrastructure that is being affected by streambank erosion.				X	Through the Stormwater Management Program, NEORSRD has identified infrastructure affected by erosion and is working with the individual communities to implement solutions.
Develop a plan that addresses maintenance of the waterways and drainage concerns.				X	The NEORSRD Stormwater Management Program incorporates planning for the inspection and maintenance of waterways
There is concern regarding areas that flood, but have no associated mapping. Seek funding to map non-flood Zone areas within the County.				X	NEORSRD, via the Stormwater Management Program, is in the process of gathering this information.
Coordinate and facilitate outreach to all participating NFIP communities within Cuyahoga County. Evaluate higher standards that could be implemented in the County.				X	In the original plan a lack of continuity was identified among the 59 communities' respective interpretations of NFIP regulations. Through their Stormwater Management Plan, NEORSRD seeks to work with the watershed groups and municipalities to increase the continuity of NFIP regulation interpretations among relevant stakeholders.

### 5.5.3 Mitigation Action Development

To begin the process of identifying mitigation actions, the HMP Planning Committee reviewed the identified hazards, as well as the mitigation goals and objectives. Based upon priorities and risk assessment results, mitigation actions were developed. Most importantly, the newly developed mitigation actions acknowledge updated risk assessment information outlined in Section 4.

#### 5.5.3.1 Mitigation Costs

Cost effectiveness of each measure was a primary consideration when developing mitigation actions. Because mitigation is an investment to reduce future damages, it is important to select measures for which the reduced damages over the life of the measure are likely to be greater than the project cost. For structural projects, the level of cost effectiveness is primarily based on the likelihood of damages occurring in the future, the severity of the damages when they occur, and the level of effectiveness of the selected measure.

While detailed analysis was not conducted during the mitigation action development process, these factors were of primary concern when selecting measures. For measures that do not result in a quantifiable reduction of damages, such as public education and outreach, the relationship of the probable future benefits and the cost of each measure was considered when developing the mitigation actions.

New mitigation actions for the 2017 plan are found below. A blue asterisks ( \* ) denotes an action that strengthens a community's participation in the NFIP.

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
1	All NFIP Jurisdictions *	1	Flooding	1a	Develop partnerships to enhance stormwater regulations countywide.	Cuyahoga County, NEORSD, Individual NFIP Jurisdictions	Staff time and resources	2017-2022	Existing funds	Mark Christie	Interim Manager CCOEM	23
2	All NFIP Jurisdictions *	2	Flooding / Erosion	1a	Create model ordinances addressing streambank erosion to establish increased continuity among communities.	Cuyahoga County, NEORSD, Individual NFIP Jurisdictions	Staff time and resources	2017-2022	Existing funds	Mark Christie	Interim Manager CCOEM	23
3	All NFIP Jurisdictions *	3	Flooding	2c	Install diversion devices on roadways prone to flash flooding throughout the County. The devices would be intended to either dissuade or inhibit drivers from attempting to navigate flooded roadways.	Cuyahoga County, Individual NFIP Jurisdictions	\$1.2 million	2019-2022	Existing community funds, FEMA Grants	Mark Christie	Interim Manager CCOEM	18
4	All NFIP Jurisdictions *	4	Flooding	2b	Develop a plan that addresses maintenance of the waterways and drainage concerns.	Cuyahoga County, Individual NFIP Jurisdictions	\$20,000	2018-2020	Existing community funds, FEMA Grants	Mark Christie	Interim Manager CCOEM	20

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
5	All NFIP Jurisdictions *	5	Flooding	1a	Map areas that flood that are outside of the SFHA.	Cuyahoga County, NEORS, Individual NFIP Jurisdictions	Staff time and resources	2017-2022	Existing funds	Mark Christie	Interim Manager CCOEM	23
6	All NFIP Jurisdictions *	6	Flooding	1a, 2b	Coordinate higher floodplain regulation standards across all NFIP communities in the County	Cuyahoga County, NEORS, Individual NFIP Jurisdictions	Staff time and resources	2017-2022	Existing funds	Mark Christie	Interim Manager CCOEM	23
7	Bay Village	1	Severe Thunderstorms / Severe Winter Storms / Extreme Temperatures	5a, 6a, 11a	Educate citizens regarding the dangers of severe weather, extreme heat, and cold and the steps they can take to protect themselves before and during the occurrences of severe weather and extreme temperatures. Education efforts will take place through email blasts, Mayor's newsletter, and/or the Police Department Facebook page.	Fire Chief	Staff time and resources	2017-2022	Existing funds	Chris Lyons	Fire Chief	22
8	Beachwood	1	Severe Thunderstorms / Severe Winter Storms / Tornadoes	5a, 6a, 9a	Purchase cots and blankets to address the identified service gaps present in the community.	Beach Dept. Fire Rescue	\$2,366	2017-2021	US DHS Grant, Assistant to Firefighters Gran, Ohio EMA Grant, corporate partners	William Peskura	Asst. Fire Chief	23
9	Bedford	1	Active Shooters	16a	Provide law enforcement and firefighters with the proper training on how to best deal with an active shooter incident.	Village of Bedford	\$3,500 and staff time	2017-2018	DHS grants, County Funds, Local funds for match	David Nagy	Fire Chief	20
10	Bedford Heights	1	Tornadoes	9b	Create a public education newsletter detailing how to remain safe during tornadoes.	Bedford Heights Fire Department	\$1,000	2017-2022	Fire Prevention Inspection Fees	Kenneth Ledford	Fire Chief	23
11	Bentleyville	1	Geologic Hazards	7a	Install a retaining wall along Miles Road and Chagrin River Road to protect vehicles from landslides	Village of Bentleyville	\$25,000	2017-2022	Existing funds, Cuyahoga County, Grants	Jeff Filarski	Village Engineer	19

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
12	Berea	1	Tornadoes / Severe Thunderstorms	9a, 11a	Educate village officials and residents on the concept of mitigation planning through public meetings.	Village of Berea	Staff time and resources	2017	Existing funds	Mark Kaufhold	Fire Chief	22
13	Berea	2	Tornadoes / Severe Thunderstorms	9a, 11b	Incorporate tornado-resistant design into future building standards. This will also include sheltering requirements sufficient for each building.	Village of Berea	Staff time and resources	2017-2022	Existing funds	Mark Kaufhold	Fire Chief	23
14	Berea	3	Tornadoes / Severe Thunderstorms	9a, 11b	Work with the Red Cross to qualify existing buildings in Berea as tornado shelters.	Village of Berea	Staff time and resources	2017-2022	Existing funds, FEMA Grants	Mark Kaufhold	Fire Chief	20
15	Bratenahl	1	Severe Thunderstorms	11a	Provide information via the Village website that describes actions that can be taken by residents to protect themselves and their property before and during severe weather events.	Village Administrator	Staff time and resources	2017-2018	Existing budget	Donald Bierut	Village Engineer	23
16	Bratenahl	2	Utility Disruption	14c	Provide information via the Village website and mailings that describes actions that can be taken by residents in the event of a utility disruption. Contact information for each utility will be provided.	Village Engineer	Staff time and resources	2017-2018	Existing budget	Donald Bierut	Village Engineer	23
17	Brecksville	1	Streambank Erosion / Flooding	2c, 4a	Design and construct permanent streambank stabilization measures to protect Vaughn road at the sharp bend in the Cuyahoga River.	City of Brecksville	\$250,000	2018	Ohio EPA Section 319 Grant, FEMA, local funds	Gerry Wise	City Engineer	19
18	Broadview Hts.	1	Tornadoes	9a	Install tornado shelters to address gaps in coverage	Broadview Heights City Administration	\$200,000	2017-2022	Existing budget, future levy	Jeffrey Hajek	Fire Chief	21
19	Brook Park	1	All hazards	N/A	Conduct an evacuation drill for the NASA building at the John Glenn Center.	NASA Administrator, NASA Security and Emergency Response Personnel, City of Brook Park	Staff time and resources	2017-2021	Existing budget	Thomas Maund	Chief of Fire	22
20	Brooklyn	1	Severe Winter Storms	6a	Educated the public through an awareness campaign about severe winter storms prior to impending approaching storms.	Village of Brooklyn	\$1,000	2017-2022	Existing funds	Joseph Zemek	Fire Chief	23
21	Brooklyn	2	Severe Winter Storms	5c, 6a	Construct a warming facility for senior citizens.	Village of Brooklyn	\$1,000,000	2017-2022	FEMA Grants	Joseph Zemek	Fire Chief	19



Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
22	Brooklyn Hts.	1	Severe Thunderstorms	11a, 11b	Develop a disaster recovery plan	Village of Brooklyn Heights	Staff time and resources	2017-2022	FEMA grants, existing budget	Joe Stefanko	Fire Chief	21
23	Chagrin Falls	1	Flooding	2a	Conduct an engineering study for various locations within the Village that have a history of flooding with the potential to cause slope failures	Village of Chagrin Falls	\$1.5 - 2 million	2018-2019	County or state funding, Local, or federal grants	Frank Zupan	Fire Chief	19
24	Cleveland	1	Severe Winter Storms, Utility Disruptions	6a, 14b	Purchase and provide generators to all city-owned pre-designated shelter locations throughout the City of Cleveland	City of Cleveland	\$50,000-\$300,000	2017-2022	HMGP, PDM	Alex Pellom	EOC Manager	20
25	Cleveland Heights	1	Extreme Temperatures	5a	Create an education campaign about the dangers of extreme temperatures and the steps the public can take to mitigate damages to themselves or their homes.	Fire Department and Public Relations	\$1,000	2019-2021	FEMA grants	Dave Freeman	Fire Chief	23
26	Cleveland Heights	2	Extreme Temperatures / Severe Winter Weather	5b, 5c, 6a	Install a generator at the Community Center to allow use as a warming/cooling center.	City Manager/Public Works/Community Center Director	\$125,000	2019-2021	FEMA grants	Dave Freeman	Fire Chief	20
27	Cleveland Heights	3	Severe Winter Weather	6	Perform table top exercises to test readiness of the community and to identify vulnerable populations.	Fire Chief, Office of Aging, Public Relations	\$5,000	2020-2022	FEMA grants	Dave Freeman	Fire Chief	21
28	Cleveland Heights	4	Severe Thunderstorms	11	Develop a database to track wind patterns using GIS.	Fire Chief	\$10,000	2020-2022	FEMA grants	Dave Freeman	Fire Chief	23
29	Cleveland Heights	5	Severe Thunderstorms	11	Develop exercises to address storm readiness across departments.	Fire Chief	\$5,000	2020-2022	FEMA grants	Dave Freeman	Fire Chief	22
30	Cleveland Heights	6	Severe Thunderstorms	11	Work with utilities to develop best practices for protecting power lines.	Fire Chief / Public Works	\$10,000	2020-2022	FEMA grants	Dave Freeman	Fire Chief	21

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
31	Cleveland Heights	7	Severe Thunderstorms	11a	Create an education campaign about the dangers of thunderstorms and the steps that the public can take to mitigate damages.	Fire Chief	\$1,000	2020-2022	FEMA grants	Dave Freeman	Fire Chief	23
32	Cleveland Heights	8	Tornadoes	9b	Perform table top exercises to test readiness of the community and to identify vulnerable populations.	Fire Chief, Public Relations	\$5,000	2020-2022	FEMA grants	Dave Freeman	Fire Chief	22
33	Cleveland Heights	9	Tornadoes	9a	Promote the construction and use of safe rooms to the public using a public education campaign.	Fire Chief, Public Relations	\$1,000	2020-2022	FEMA grants	Dave Freeman	Fire Chief	23
34	Cuyahoga County	1	Tornado, Geologic Hazards, Flooding, Drought, etc.	2b, 8, 9	Cuyahoga County will hire a contractor to facilitate the development of a comprehensive Long-Term Recovery Plan as an Annex to the Cuyahoga County Emergency Operations Plan (EOP). The plan would be developed in alignment with the National Recovery Framework (NRF) and replace Cuyahoga County's Emergency Support Function (ESF) 14 Annex.	Cuyahoga County, selected contractor	\$45,000	2020-2022	HMGP, PDM	Mark T. Christie	Interim Manager, CCOEM	20

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
35	Cuyahoga County	2	Hazardous Materials Incident / Earthquake / Tornadoes / Terrorism	7a, 9, 12a, 12b, 17a	<p>Cuyahoga County will hire a contractor to facilitate a comprehensive update to the Cuyahoga County Evacuation Annex to the County Emergency Operations Plan (EOP). The update would focus on reviewing and updating roles and responsibilities, evacuation routes, corresponding mapping, contra-flow procedures, and designated pick-up points. The update will strengthen local evacuation capabilities by including the following elements:</p> <p>1. A base document to outline Cuyahoga County's overarching approach to evacuation planning.</p> <p>2. Individual templates for political subdivisions to conduct local evacuation planning. These templates will be developed in alignment with the base document and enable political subdivisions to expand their planning through the identification and inclusion of community-specific information such as, local hazard areas (e.g. floodplains, railways), HAZMAT facilities, local evacuation routes, procedures, etc.</p>	Cuyahoga County, selected contractor	\$45,000	2020-2022	HMGP, PDM	Mark T. Christie	Interim Manager, CCOEM	20
36	Cuyahoga County	3	Active Shooter / Fire / Utility Disruptions/ Terrorism	12a, 14b, 16a	Cuyahoga County will seek grant funding opportunities to purchase or put-together workplace preparedness kits to distribute to County offices as a part of the Cuyahoga County Employee Emergency Preparedness Program. The kits will be accounted for by department Floor Captains and include items such as weather radios, reflective vests, basic first aid supplies, pen + paper, flashlight w/ batteries, a whistle, etc.	Cuyahoga County Office of Emergency Management	\$5,000	2017-2019	HMGP, Existing Budget	Mark T. Christie	Interim Manager, CCOEM	23
37	Cuyahoga County	4	All-hazards	N/A	Cuyahoga County will seek grant funding opportunities to support the development, outfitting, and maintenance of a FEMA Type III All-hazards Incident Management Team (AHIMT).	Cuyahoga County Office of Emergency Management	\$100,000 - \$200,000	2019-2021	HMGP, PDM, other sources available	Mark T. Christie	Interim Manager, CCOEM	19

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
38	Cuyahoga County	5	Severe Thunderstorm / Severe Winter Weather / Terrorism / Earthquake / Tornado / Major Fire	6, 7, 11	Cuyahoga County will hire a contractor to facilitate the development of a comprehensive Debris Management Annex to the Cuyahoga County Emergency Operations Plan (EOP).	Cuyahoga County, selected contractor	\$45,000	2020-2022	HMGP, PDM	Mark T. Christie	Interim Manager, CCOEM	20
39	Cuyahoga County	6	IT / Communications Disruption	11a	Cuyahoga County will contract with a vendor to assess, recommend upgrades, and complete recommended upgrades of the County's Data Sharing Warehouse in order to mitigate the impact to Countywide operations and investigative services during prolonged data/power outages.	Cuyahoga County, selected contractor	\$500,000	2017-2022	HMGP, PDM	Jeff Harraman	PSJS Grants Supervisor	19
40	Cuyahoga County	7	IT / Communications Disruption	11a	Cuyahoga County will contract with a vendor to assess, recommend upgrades, and complete recommended upgrades of the County's 9-1-1 system to mitigate the effect of prolonged 9-1-1 system loss for Cuyahoga County citizens.	Cuyahoga County, selected contractor	\$500,000	2017-2022	HMGP, PDM	Jeff Harraman	PSJS Grants Supervisor	19
41	Cuyahoga County	8	Dam Failure	19a	Coordinate with dam owners to ensure that their inundation mapping and response plans are being kept up to date	Cuyahoga County	Staff time and resources	2017-2022	Existing Funds	Mark Christie	Interim Manager, CCOEM	21
42	Cuyahoga County	9	Nuclear Power Incident	21b	Create an education campaign for those within the IEP about the risks posed by radiation.	Cuyahoga County	\$1,000	2017-2022	Existing Funds	Mark Christie	Interim Manager, CCOEM	23
43	Cuyahoga County	10	Civil Disruption	20a	Provide first responders with the appropriate training and knowledge with how to respond efficiently and sensitively to civil disruptions.	Cuyahoga County	\$10,000	2017-2022	Existing Funds	Mark Christie	Interim Manager, CCOEM	21
44	Cuyahoga County	11	Health-Related Emergency	10a	Cuyahoga County will create and distribute a newsletter informing residents and workers about disease entities, and how to prevent bacteria and viruses from spreading.	Cuyahoga County	\$1,000	2017-2022	Existing Funds	Mark Christie	Interim Manager, CCOEM	22
45	Cuyahoga County *	12	Flooding	2c	Install stream gauges in creeks and tributaries that cause flooding in areas not considered to be in the 100 year flood zone.	Cuyahoga County	\$10,000	2017-2022	Existing Funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	18

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46	Cuyahoga County	13	Flooding / Severe Thunderstorms / Building Collapse	2a, 11a, 13c	Purchase Preliminary Damage Assessment (PDA) Field Guides to disseminate among first responders.	Cuyahoga County	\$2,000	2017-2022	Existing Funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	21
47	Cuyahoga County	14	Severe Thunderstorms / Severe Winter Weather	6a, 11a	Develop outreach educating citizens on the responsibility of tree maintenance and removal with regard to power outages caused by severe weather.	Cuyahoga County	\$3,000	2017-2022	Existing Funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	22
48	Cuyahoga County	15	Flooding	2a	Develop initiatives/PSAs to educate residents as it relates to non-flood zone flooding in the County.	Cuyahoga County	\$2,000	2017-2022	Existing Funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	22
49	Cuyahoga County	16	Flooding	2c	Add more USGS stream gauges with historical data to develop web based interactive flood-inundation maps.	Cuyahoga County	\$10,000	2017-2022	Existing Funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	18
50	Cuyahoga County	17	Severe Thunderstorms	11a	Create a strategic outreach program to promote a program for regional NWS Sky Warn classes to educate identified community/voluntary organizations (e.g. Neighborhood Watch, CERT, etc.).	Cuyahoga County	\$2,000	2017-2022	Existing Funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	22
51	Cuyahoga County	18	Flooding / Erosion	4a	Work with established watershed groups to evaluate causes of erosion	Cuyahoga County	Staff time and resources	2017-2022	Existing Funds	Mark Christie	Interim Manager, CCOEM	22
52	Cuyahoga County	19	Flooding / Severe Thunderstorms / Severe Winter Storms	2b, 6a, 11b	Map critical facilities within the County.	Cuyahoga County	Staff time and resources	2017-2022	Existing Funds	Mark Christie	Interim Manager, CCOEM	20
53	Cuyahoga County*	20	Flooding	2a	Implement an outreach strategy targeting communities in the County that have repetitive loss properties.	Cuyahoga County	Staff time and resources	2017-2022	Existing Funds	Mark Christie	Interim Manager, CCOEM	23
54	Cuyahoga County	21	Flooding	2a	Develop outreach for school aged children in the form of PSA's or other innovative connection to educate them on the dangers of flash floods.	Cuyahoga County	\$2,500	2017-2022	Existing Funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	21



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55	Cuyahoga County	22	Flooding	2c	Replace inadequate, undersized stormwater infrastructure.	Cuyahoga County, Individual jurisdictions	\$2 million	2020-2022	Community funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	21
56	Cuyahoga County	23	Building / Structural Collapse / Erosion	2c, 13a	Reinforce roadways prone to collapse with a permanent solution	Cuyahoga County	\$3 million	2020-2022	Community funds, FEMA Grants	Mark Christie	Interim Manager, CCOEM	17
57	Cuyahoga County	24	Flooding	2a	Cuyahoga County will work diligently to create and implement a public education and outreach campaign that educates Cuyahoga County residents on what they can do to prevent, protect, and respond to basement residential flooding.	Cuyahoga County	\$12,000	2017-2018	Existing Budget, FEMA PDM	Mark Christie	Interim Manager, CCOEM	22
58	Cuyahoga Hts.	1	Flooding / Erosion	2c	Stabilize stream banks with gabion baskets and bioengineered bank stabilization techniques. Install storm sewers and retention/water quality basin.	Village of Cuyahoga Heights	\$500,000	2018-2021	NEORSD Storm Water Utility Fee	Todd Sciano	Village Engineer	19
59	Cuyahoga Hts.	2	Flooding / Erosion	2c	Video inspection of existing storm sewers and sanitary sewers to determine the extent of future damage and to determine associated repair costs	Village of Cuyahoga Heights	\$100,000	2018-2021	NEORSD Storm Water Utility Fee	Todd Sciano	Village Engineer	20
60	Cuyahoga Hts.	3	Flooding / Severe Thunderstorms / Severe Winter Storms / Tornadoes	2c, 6, 9a, 11b	Video inspection of existing storm sewers and sanitary sewers to determine the extent of future damage and to determine associated repair costs	Village of Cuyahoga Heights	\$100,000	2018-2021	NEORSD Storm Water Utility Fee	Todd Sciano	Village Engineer	20
61	Cuyahoga Hts. *	4	Flooding	2b	Incorporate flood mitigation in local planning by expanding the existing park in the SFHA. Provide trail links to the existing park.	Village of Cuyahoga Heights	\$300,000	2018-2021	Cuyahoga Heights Village General Fund	Todd Sciano	Village Engineer	19
62	East Cleveland	1	Severe Winter Storms	6	Update local building codes to ensure the community power grid is not impacted by winter storms.	East Cleveland	\$1,000,000	2017-2022	City of East Cleveland, Cuyahoga County	Richard Wilcox	Fire Chief	19
63	Euclid	1	Severe Winter Storms	6	Identify at-risk populations that may be exceptionally vulnerable in the event of long-term power outages.	City of Euclid	\$5,000-\$10,000	2017-2019	Cuyahoga County EMA, FEMA, NWS, American Red Cross, Insurance Agencies	Christopher Haddock	Fire Chief	23

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64	Euclid	2	Severe Winter Storms	6a	Organize outreach to vulnerable populations, including establishing and promoting accessible heating centers in the community	City of Euclid	\$5,000-\$10,000	2017-2019	Cuyahoga County EMA, FEMA, NWS, American Red Cross, Insurance Agencies	Thomas Robinson	Fire Chief	23
65	Euclid	3	Coastal Erosion	3a	Stabilize the bluff on the Lake Erie Shoreline by eliminating the non-organic fill and demolishing what is unstable, armoring the shoreline, and re-sloping the contours of the bluff to a gradual incline where a dense, fibrous mat of native plantings will hold the land in place.	City of Euclid Community Projects Manager	\$9 million	2017-2020	State and Federal grants, Local HarborTown TIF, ODNR, Cuyahoga County Casino Revenue Fund, FEMA PDM, Great Lakes Commission, EPA, Natation Fish and Wildlife Foundation	Allison Lukacsy-Love	Comm. Projects Manager	23
66	Fairview Park	1	IT Disruption / Utility Disruption	15a	Purchase a generator for the community shelter.	City of Fairview Park	\$50,000 - \$100,000	2017-2022	FEMA and State Grants	Tony Raffin	Fire Chief	22
67	Garfield Hts.	1	Building and Structural Collapse	13a	Obtain pre-approval from internal finance department to have funds ready to respond to collapse incidents. Additionally, seek out local businesses and establish contracts with them in order to increase the efficiency of response.	Garfield Heights Fire and Finance departments	\$10,000-\$25,000	2017-2022	Finance and Government Sources	David McKee	Fire Safety Officer	22
68	Garfield Hts. *	2	Severe Thunderstorms / Flooding	2b, 11	Modify existing freeboard requirements to discourage development in flood-prone areas.	Garfield Heights Fire, Engineering, and Finance departments	Staff time and resources	2017-2022	Existing budget	David McKee	Fire Safety Officer	23
69	Garfield Hts.	3	Severe Thunderstorms / Flooding	2c, 11	Remove debris to make the existing streams more efficient	Garfield Heights Fire, Engineering, and Finance departments	\$50,000-\$100,000	2017-2022	Finance and Government Sources	David McKee	Fire Safety Officer	19
70	Gates Mills	1	Tornadoes	9	Work with the Building Department to advocate the construction of safe rooms and areas within homes, schools, and businesses by using local community publications.	Village Emergency Coordinator	\$1,000	2018	Existing budget	Thomas Robinson	Fire Chief	23

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71	Gates Mills	2	Tornadoes	9b	Increase tornado awareness for the general public through the continuation of Severe Weather Week. This will include using local monthly newsletters to educate the public, as well as tornado drills. Tornado safety pamphlets will be sent to all new residents.	Village Emergency Coordinator	\$1,000	2018	Existing budget	Thomas Robinson	Fire Chief	23
72	Glenwillow	1	Severe Storms / Utility Disruptions	11, 14a	Set up a plan with 2 local hotels in the community to house residents of nearby mobile homes if a power outage occurs during winter, or in the case of tornadoes or fires. Bus service and an evacuation plan for the mobile homes will be included.	Oakwood Fire/Police	Staff time and resources	2017-2022	Existing budget	David Tapp	Asst. Chief	21
73	Highland Hills	1	Tornadoes	9a, 9b	Purchase tornado sirens to cover gaps not covered by Warrensville Heights sirens.	Fire Chief	\$5,000 - \$10,000	2019-2020	Existing budget, FEMA grants	Arthur Timmons	Fire Chief	22
74	Highland Hts.	1	Severe storms	11b	Purchase lightning detection systems for local parks	Highland Heights Emergency Coordinator	\$15,000-\$30,000	2017-2020	Cuyahoga County, NWS, FEMA	William Turner	Fire Chief	22
75	Highland Hts.	2	Tornadoes	9a	Purchase and install additional sirens to provide optimum coverage to notify residents and guests in the community	Highland Heights Emergency Coordinator	\$20,000 per unit	2017-2020	Local funds, AFG Grants, County EMA	William Turner	Fire Chief	23
76	Highland Hts.	3	Utility Disruptions	14b	Purchase new back-up power generator for the fire and police stations	Highland Heights Emergency Coordinator	\$125,000	2017-2020	Local funds, AFG Grants, County EMA	William Turner	Fire Chief	20
77	Hunting Valley	1	Flooding / Erosion	2b, 4	Use stabilization techniques to prevent erosion around riverbanks and bridge supports.	Village of Hunting Valley	\$750,000	2017-2022	FEMA Grants	Michael Cannon	Chief of Police / Village Administrator	20
78	Independence	1	Flooding	2a	Purchase the land for and then construct a new regional detention basin	City of Independence	\$750,000	2017-2022	Cuyahoga County, NEORSD, State of Ohio SWIF Grant, Local Funds	Donald Ramm	City Engineer	19

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79	Lakewood	1	Active Shooters	14a	Provide both Fire and law enforcement personnel with the proper joint training on how to best deal with an active shooter situation together. This training would cover the joint response and tactics to stop the shooting event and improve the survivability of the most victims. Joint training sessions will be scheduled with Cleveland, Youngstown, Toledo FBI, Westshore Enforcement Bureau, Lakewood, Rocky River and Fairview Park Police and Fire Departments.	Lakewood Fire and Police, Westshore Enforcement Bureau	\$8,000	2017-2022	Lakewood General Fund, CCSEAB Grants Funds, State EMS Grants	Scott Gilman	Fire Chief	19
80	Linndale	1	Active Shooters	14a	Provide the community and first responders with information on how to handle an active shooter incident, including drills for schools, and trainings for law enforcement officers.	Village of Linndale Police Department	Staff time and resources	2017-2022	Grants, Self-funded through village offices	Lt. S. Travaccio	Lieutenant	22
81	Lyndhurst	1	Tornadoes	9a	New tornadoes sirens will be purchased and installed in areas where there are gaps in the existing system	City of Lyndhurst	\$5-10,000 per siren	2017-2019	Cuyahoga County, FEMA HMA, Local funds to match	Michael Carroll	Fire Chief	21
82	Lyndhurst	2	Active Shooters	14a	Provide both Fire and law enforcement personnel with the proper joint training on how to best deal with an active shooter situation together. This training would cover the joint response and tactics to stop the shooting event and effect the survivability of the most victims.	City of Lyndhurst	\$8,000	2017-2019	DHS grants, County Funds, Local funds for match	Michael Carroll	Fire Chief	22
83	Lyndhurst	3	Severe Thunderstorms / Extreme Heat	5a, 6	Create a public education campaign that informs residents, businesses, and institutions on the importance of preparing for severe weather emergencies.	City of Lyndhurst	\$1,500	2017-2020	National Weather Service Grants, FEMA Grants, Local funds for match	Michael Carroll	Fire Chief	23
84	Maple Hts.	1	Extreme Temperatures	5b	Modify existing local landlord codes to include minimum housing temperatures for their tenants.	Maple Heights Fire Dept.	Staff time and resources	2017-2018	Existing Budget	Daniel Syphen	Fire Chief	22
85	Maple Hts.	2	N/A	N/A	Map community risk using GIS	Maple Heights Fire Dept.	Staff time and resources	2017-2018	Existing Budget	Daniel Syphen	Fire Chief	22
86	Maple Hts.	3	Severe winter storms	5c, 6	Assist vulnerable populations by establishing a heating center	Maple Heights Fire Dept.	Staff time and resources	2017-2018	Existing Budget	Daniel Syphen	Fire Chief	21

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87	Mayfield Village	1	Severe Thunderstorms	11a	Create an awareness campaign detailing the dangers of hail and what it can do to homes and vehicles	Mayfield Fire Chief	\$4,000	2017-2021	FEMA Grants	Eugene Carcioppolo	Fire Chief	22
88	Mayfield Hts.	1	Tornadoes	9a	Purchase and install additional sirens to provide optimum coverage to notify residents and guests in the community	Mayfield Heights	\$15,000-\$25,000	2017-2019	Cuyahoga County, FEMA HMA, Local funds to match	Bruce Elliott	Fire Chief	20
89	Middleburg Hts.	1	Flooding	2b	Identify areas that are more at risk to basement flooding through monitoring.	Middleburg Fire Department	\$5,000 annually	2017-2019	Existing budget	Braint Galgas	Fire Chief	23
90	Moreland Hills	1	Geologic Hazards	7	Place netting alongside areas prone to landslides to reduce the risk to drivers in the event of earthquakes	Village of Moreland Hills	\$25,000	2017-2022	Existing budget, FEMA grants	Kevin Wyant	Chief of Police	19
91	Newburgh Hts.	1	HazMat Incidents	18a	Working with Village of Cuyahoga Heights and the Emergency Response Team at McGean Chemical Company to implement an education safety program for the workers and management to reduce the possibility of a Hazardous Spill. Working with our Southwest Emergency Response Team (SERT HazMat Team) formulate a Emergency Response Plan for the SERT HazMat Team, Cuyahoga Heights Fire Department, Newburgh Heights Fire Department and the Cuyahoga County Emergency Operation Center if a HazMat spill would occur.	Village of Newburgh Heights	\$30,000	2017-2022	Capital Budget Money, FEMA grants, McGean Chemical Company	Brian Higginbotham	Fire Chief	23
92	North Olmsted	1	Flooding	2c	Retrofit existing culverts and ditches to increase stormwater flow	North Olmsted, Cuyahoga County	\$200,000	2018	City and County taxes	Edward Schepp	Fire Chief	19
93	North Olmsted	2	Flooding	2c	Construct a flood basin to ease flooding	City of North Olmsted	\$240,000	2017	City taxes	Edward Schepp	Fire Chief	19
94	North Randall	1	Utility Disruptions	14	Obtain safety equipment, including reflective vests, for use of traffic control during power outages	Village of North Randall	\$500	2017-2019	Existing Budget	Anthony Lombardo	Firefighter / Paramedic	22
95	North Royalton *	1	Flooding	2b	Implement an ordinance that will allow the NEORS to collect fees where 25% will go to future local flood mitigation projects, and 75% will go to regional projects.	City of North Royalton, NEORS	Staff time and resources	2017-2022	Existing budget	Robert Chegan	Fire Chief	21
96	Oakwood	1	HazMat Incidents	18a	Contract with rescue teams to provide quick assistance to hazardous materials situation	Oakwood	\$10,000	2017-2022	Existing budget	David Tapp	Asst. Fire Chief	23

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97	Olmsted Falls	1	Extreme Temperatures	5c	Provide a place for at-risk residents to stay during extreme heat or extreme cold events.	Olmsted Falls Fire Department	Staff time and resources	2017	Existing budget, donations from residents	Chad Gluss	Fire Chief	22
98	Olmsted Township	1	HazMat Incidents	18a, 18b	For those residents near the Norfolk Southern Rail Line, provide training and education, along with an alert system, in the event of a train car derailment resulting in a hazardous material spill.	Olmsted Township, Cuyahoga County OEM	Staff time and resources	2017-2020	Grants, Township budget, Insurance agencies	Patrick Kelly	Fire Chief	22
99	Olmsted Township *	2	Severe Thunderstorms / Tornadoes / Flooding	2b, 9, 11	Modify existing building codes to make future construction more resistant to high wind events and flooding, including the prevention of using lightweight materials in the flood plain.	Olmsted Township, Cuyahoga County OEM	Staff time and resources	2017-2020	Grants, Township budget, Insurance agencies	Patrick Kelly	Fire Chief	23
100	Orange	1	Utility Disruptions	14b	Install a generator that would power the entire Municipal Building, including administration, fire, and police.	Orange Village	\$10,000	2017-2019	Cuyahoga County, FEMA HMA	Robert Wilson	Fire Chief	20
101	Parma	1	Flood / Tornadoes / Severe Thunderstorms	2b, 9, 11	Contract with a firm to create a disaster recovery plan that will provide details actions for flood, tornado, and storm incidents.	Parma	\$50,000-\$100,000	2017-2022	SAA Grants	Mike Lasky	Fire Chief	21
102	Parma Hts.	1	Utility Disruption / Severe Thunderstorms / Severe Winter Storms	6, 11, 14b	Upgrade the Fire Department and Police Department generators, and install a generator at City Hall	Mayor, Fire Chief, Police Chief, Service Director	\$100,000	2020-2021	Existing budget, FEMA Grants	Bryan Sloan	Fire Chief	19
103	Pepper Pike	1	Active Shooters	14a	Train public safety personnel for potential active shooter incidents	City of Pepper Pike	\$5,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	23
104	Pepper Pike	2	Building and Structural Collapse	13c	Provide Urban Search and Rescue training for fire personnel	City of Pepper Pike	\$10,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	20
105	Pepper Pike	3	Erosion	4	Map and assess vulnerability to erosion in Pepper Pike	City of Pepper Pike	\$3,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	22
106	Pepper Pike	4	Erosion	4a	Increase awareness of erosion hazards through pamphlets sent out to the public	City of Pepper Pike	\$1,500	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	23
107	Pepper Pike	5	Extreme Temperatures	5a	Create a public information campaign regarding the risks of extreme temperatures, including how to remain cool during heat, and that property owners should run water to prevent pipes from freezing during extreme cold events.	City of Pepper Pike	\$3,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	23

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108	Pepper Pike *	6	Flooding	2b	Incorporate flood mitigation into local planning, including into storm water management plans	City of Pepper Pike	Staff time and resources	2017-2022	Existing budget	John Frazier	Fire Chief	23
109	Pepper Pike *	7	Flooding	2b	Strengthen and form partnerships with local organizations and businesses to support flood plain management	City of Pepper Pike	Staff time and resources	2017-2022	Existing budget	John Frazier	Fire Chief	22
110	Pepper Pike	8	Flooding	2c	Conduct regular maintenance for drainage systems	City of Pepper Pike	\$50,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	21
111	Pepper Pike	9	Flooding	2a	Send a public education campaign mailer to property owners informing them of flood safety measures and flood mitigation techniques	City of Pepper Pike	\$3,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	23
112	Pepper Pike	10	Severe Thunderstorms / Tornadoes	9b, 11a	On the City's website, have a section where residents and visitors can find information on the risks associated with severe thunderstorms and tornadoes	City of Pepper Pike	Staff time and resources	2017-2022	Existing budget	John Frazier	Fire Chief	23
113	Pepper Pike	11	Severe Thunderstorms / Tornadoes	9, 11	Adopt and enforce building codes so that site and building design standard are resistant to both thunderstorm and tornado wind damages	City of Pepper Pike	\$50,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	20
114	Pepper Pike	12	Severe Thunderstorms	11	Assess vulnerability to severe wind events in Pepper Pike	City of Pepper Pike	\$10,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	21
115	Pepper Pike	13	Severe Winter Storms	6	Adopt and enforce building codes to make them more resistant to winter storms; this includes ensuring that roofs can support the weight of snow and ice	City of Pepper Pike	Staff time and resources	2017-2022	Existing budget	John Frazier	Fire Chief	22
116	Pepper Pike	14	Severe Winter Storms	6	Purchase additional salt to be laid out on the roads to reduce the impact of severe winter storms on roadways	City of Pepper Pike	\$50,000	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	20
117	Pepper Pike	15	Severe Winter Storms	6a	Create a public information campaign regarding the risks of winter storms, including but not limited to freezing temperatures, snow on the roads, and what to do in the event of a power outage.	City of Pepper Pike	\$1,500	2017-2022	Cuyahoga County, State of Ohio, FEMA	John Frazier	Fire Chief	23
118	Pepper Pike	16	Severe Winter Storms	6	Map and assess those population vulnerable to winter storms in Pepper Pike	City of Pepper Pike	Staff time and resources	2017-2022	Existing budget	John Frazier	Fire Chief	22



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119	Richmond Hts.	1	Utility Disruptions	14b	Purchase additional generators to be placed at select municipal buildings	Richmond Heights	\$40,000	2017-2020	Cuyahoga County, State of Ohio, FEMA, local funds to match	Marc Neumann	Fire Chief	21
120	Richmond Hts.	2	Tornadoes	9a	Purchase and install additional sirens to provide optimum coverage to notify residents and guests in the community	Richmond Heights	\$25,000 per siren	2017-2022	Cuyahoga County, State of Ohio, FEMA, local funds to match	Marc Neumann	Fire Chief	20
121	Rocky River	1	Flooding	2a	Create a "Ready Notify" system to alert residents of impending flooding caused by heavy rain and/or snow melt.	Rocky River Fire Department	\$25,000	2017-2022	Cuyahoga County OEM, Ohio EMA, FEMA Grants	Aaron Lenart	Fire Chief	21
122	Rocky River	2	Terrorism	12	Search for funding to rectify security vulnerabilities in City Hall. Create a pricing package for desired resolutions.	Director of Public Safety Services	\$75,000	2017	OEMA Security Grants for Non-Profits, Existing Budget	Mary Kay Costello	Director of Public Safety Services	19
123	Rocky River	3	Utility Disruptions / Severe Thunderstorms	14b	Install a backup generator at the Waste Water Treatment Plant and at the Civic Center. A backup generator at the WWTP will prevent untreated, emergency sanitary overflow into Lake Erie, and the one at the Civic Center will provide power to the facility for Red Cross emergency housing.	Director of Public Safety	\$560,000	2017-2018	City of Rocky River Capital Improvement Funds, PDM	Mary Kay Costello	Director of Public Safety Services	20
124	Seven Hills	1	Tornadoes	9a	Installation of 3 outdoor warning sirens in the city: 1) E. Pleasant Valley and McCreary, 2) Calvin Park, 3) Rockslide and North Skyline	Fire Chief	\$100,000	2017	General Fund	Mike McConville	Fire Chief	20
125	Shaker Hts.*	1	Severe Thunderstorms	14b	Purchase and provide generators to all critical facilities within the City.	City of Shaker Heights	\$5,000 - \$10,000 per generator	2017-2019	Local Power Company, Cuyahoga County EMA	Jim Heath	Asst. Fire Chief	22
126	Shaker Hts.*	2	Active Shooters	16a	Provide both Fire and law enforcement personnel with the proper joint training on how to best deal with an active shooter situation together. This training would cover the joint response and tactics to stop the shooting event and effect the survivability of the most victims.	City of Shaker Heights	\$6,000 and staff time	2017-2019	City of Shaker Heights	Jim Heath	Asst. Fire Chief	20
127	Solon	1	Severe Thunderstorms / Severe Winter Storms	6, 11	Purchase new and additional AM radios to be placed in critical facilities throughout the city	City of Solon	\$5,000	2017-2018	Existing budget	William Shaw	Fire Chief	23

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
128	South Euclid	1	Extreme Temperatures	5a	Send out fliers or postcards to local residents to inform them of how to stay safe during times of extreme heat or extreme cold, including where heating and cooling centers are located.	City of South Euclid	\$500	2017-2019	Grants, local matching funds, Community Services	Douglas Stefko	Fire Chief	23
129	Strongsville	1	Severe Thunderstorms	11	Adopt local building codes that require buildings to meet a minimum wind threshold for construction.	City of Strongsville	Staff time and resources	2017-2019	Existing budget	Jack Draves	Fire Chief	22
130	Strongsville	2	Extreme Temperatures	5b	Adopt local building codes that require best practice methods that make structures more energy-efficient, and more able to avoid extreme temperature fluctuations.	City of Strongsville	Staff time and resources	2017-2019	Existing budget	Jack Draves	Fire Chief	22
131	Strongsville	3	All hazards	N/A	Identify and map vulnerable populations.	City of Strongsville	Staff time and resources	2017-2019	Existing budget	Jack Draves	Fire Chief	20
132	Strongsville	4	Severe Thunderstorms / Tornadoes / Flooding	2a, 9b, 11a	Use education and public outreach to educate the public on weather notifications, encourage family disaster plans and supply kits, and to help neighbors during extreme weather incidents. Announce the availability of emergency shelters when appropriate.	Strongsville Fire and Emergency Services in conjunction with other City Departments.	\$1,000	2017-2020	Strongsville Fire and Emergency Services, Fire Prevention Budget	Jack Draves	Fire Chief	23
133	Strongsville	5	Flooding	2b	Map and identify stormwater intake points, and begin a tracking program to denote flood-prone areas	City of Strongsville Engineering & Service Departments	Staff time and resources	2017-2020	FEMA grant, NEORS, Strongsville Sewer Fund, Drainage Levy	Lori Daley	Design Engineer	22
134	Strongsville	6	Flooding	2a	Create a public education flyer that informs residents about the benefits of keeping storm drains clear of debris	City of Strongsville Engineering & Service Departments	\$1,000	2017-2020	FEMA grant, NEORS, Strongsville Sewer Fund, Drainage Levy	Lori Daley	Design Engineer	23
135	Strongsville	7	Flooding	2c	Clear creeks and catch basins of debris to ensure that they are operating as efficiently as possible through routine inspections and maintenance	City of Strongsville Engineering & Service Departments	\$250,000	2017-2021	FEMA grant, NEORS, Strongsville Sewer Fund, Drainage Levy	Lori Daley	Design Engineer	19
136	University Hts.	1	Flooding	2c	Repair, replace, and clean stormwater catch basins and pipes as needed in order to improve the overall system to reduce flooding.	City of University Heights	\$750,000	2017-2022	FEMA Grants	Douglas Zook	Fire Chief	20

Mit. Act. #	Comm.	#	Hazard(s) Addressed	Goal / Obj.	Action	Resp. Party	Cost	Time Frame	Fund. Src.	Rep.	Title	Priority
137	Valley View	1	Flooding / Erosion	2c	Stabilize stream banks with gabion baskets and bioengineered bank stabilization techniques. Stabilize slopes with vegetation plantings.	Village of Valley View	\$500,000	2018-2021	NEORS D Storm Water Utility Fee	Todd Sciano	Village Engineer	19
138	Valley View *	2	Flooding	2b	Buy out properties within the Base Flood Elevation, and introduce legislation that ensure all new construction is at least 2 feet above the BFE.	Village of Valley View	\$1,000,000	2018-2021	FEMA FMA Grant, OEMA Hazard Mitigation Grant Program	Todd Sciano	Village Engineer	19
139	Valley View	3	Flooding / Severe Thunderstorms / Severe Winter Storms / Tornadoes	2, 6, 9a, 11	Provide an early warning system, to include sirens, during storm events. Provide shelter at the Valley View Community Center during flooding and during severe winds, severe winter weather, and tornadoes when power may be lost and homes may be damaged.	Village of Valley View	\$100,000	2018-2021	Valley View Village General Fund	Todd Sciano	Village Engineer	19
140	Valley View	4	Erosion / Landslides	2c, 7	Stabilized slopes with vegetation planting and, if necessary, gabion baskets and retaining walls.	Village of Valley View	\$300,000	2018-2021	Cuyahoga County	Todd Sciano	Village Engineer	19
141	Valley View	5	Flooding / Erosion	2c	Video inspection of existing storm sewers and sanitary sewers to determine the extent of future damage and to determine associated repair costs	Village of Valley View	\$100,000	2018-2021	NEORS D Storm Water Utility Fee	Todd Sciano	Village Engineer	20
142	Walton Hills	1	Severe Thunderstorms / Tornadoes	9a, 11	Upgrade tornado sirens to also include lightning notification	Village of Walton Hills	\$2,000	2017-2022	Existing budget	David Tapp	Asst. Chief	22
143	Warrensville Hts.	1	Transportation Incident	17b	Create a notification system for residents and businesses nearest the rail lines for quick response in case there is ever a train derailment.	Warrensville Heights Fire Department	\$1,000	2017-2022	Existing budget	Herbert Waugh	Fire Chief	23
144	Westlake	1	Flooding	2c	Restore the wetlands in the City so that they filter out excess nutrients that drain into Lake Erie.	City of Westlake	\$480,000	2017-2019	FEMA HMA, City of Westlake Storm Water Capital Funding	Paul Quinn	Director of Public Service	19
145	Woodmere	1	Tornadoes	9a	Purchase and install additional sirens to provide optimum coverage to notify residents and guests in the community	Woodmere	\$5,000 - \$10,000 per siren	2017-2019	Cuyahoga County, FEMA HMA, Local funds to match	Charles Smith	Safety Director	21