



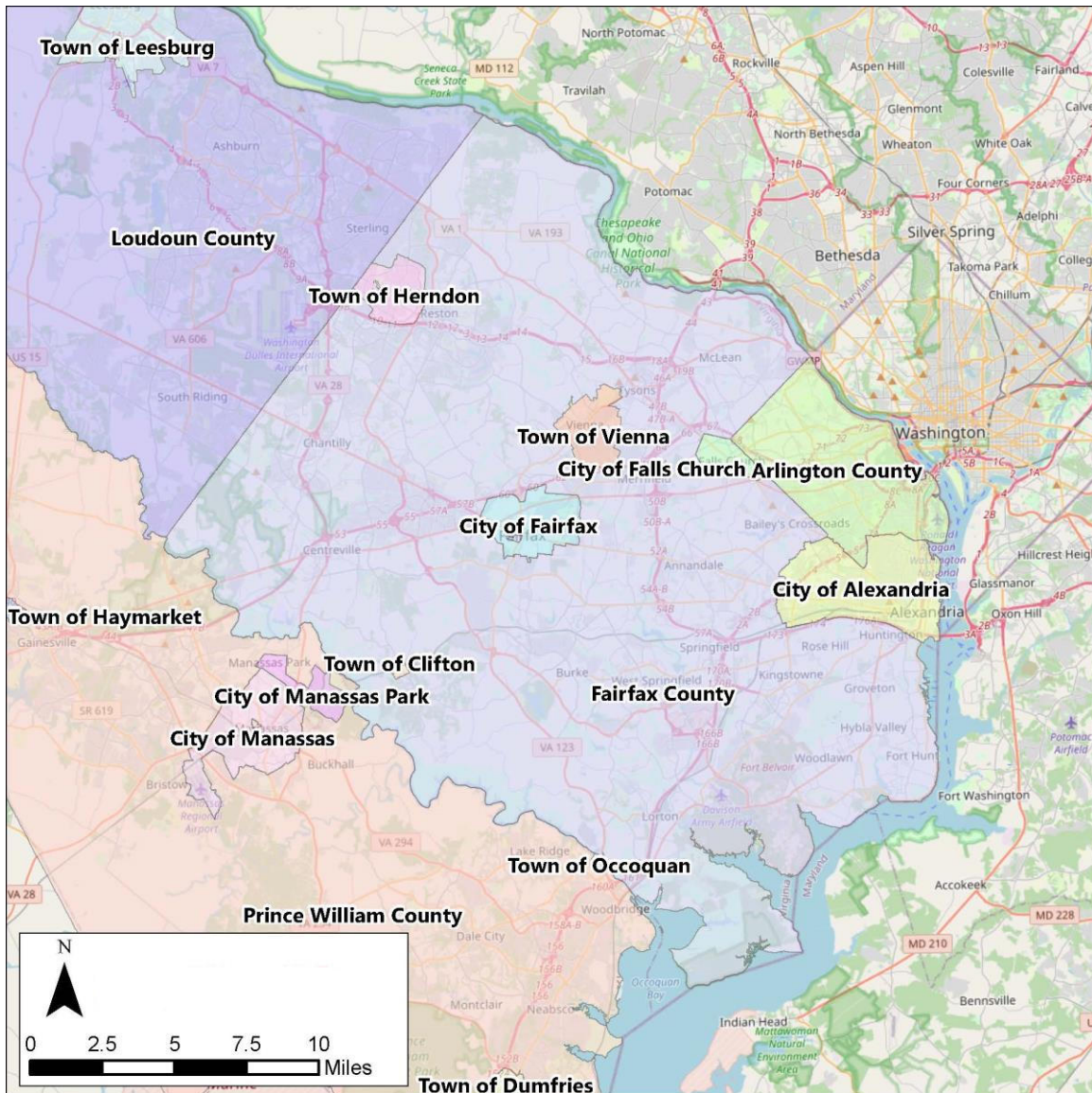
Northern Virginia Hazard Mitigation Plan

## **Annex 7: Fairfax County**







November 2022



## Fairfax County Overview



**Table 1: Specific Jurisdictional Data**

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| ESTABLISHED   | LAND AREA   | 2020 POPULATION   | GOVERNMENT ADDRESS  | HOUSEHOLDS  | MITIGATION FOCUS  |
| 1742  | 406 sq. mi.   | 1,171,848   | 12000 Government Center Pkwy<br>Fairfax, VA 22035                                   | 417,464   | Winter Storm, Flood/Flash Flood and High Wind/Severe Storms                           |

## Fairfax County's Risk Environment

The following is a snapshot of the details in this annex. The well-researched details form the basis of effective mitigation strategies to improve community resilience.

### *Hazard Event History*

National Centers for Environmental Information, 1950–June 2021

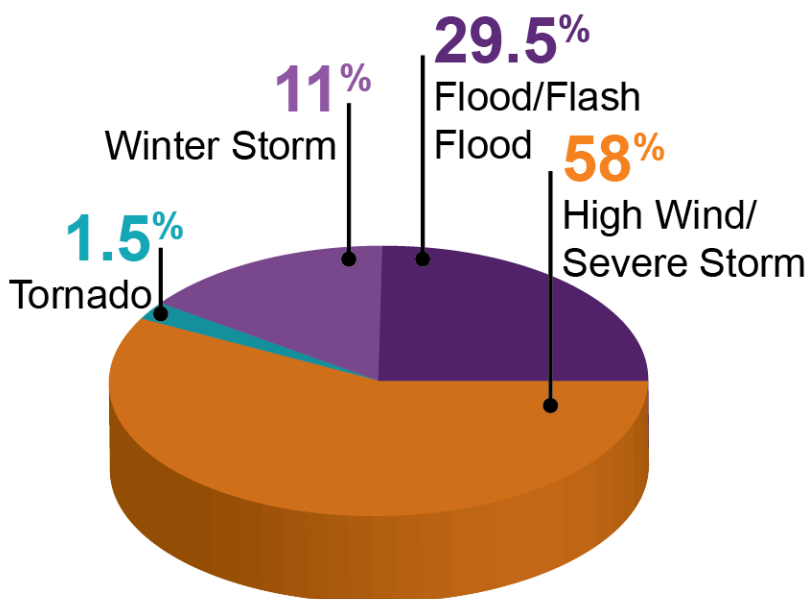


Figure 1: Percentage of Hazards

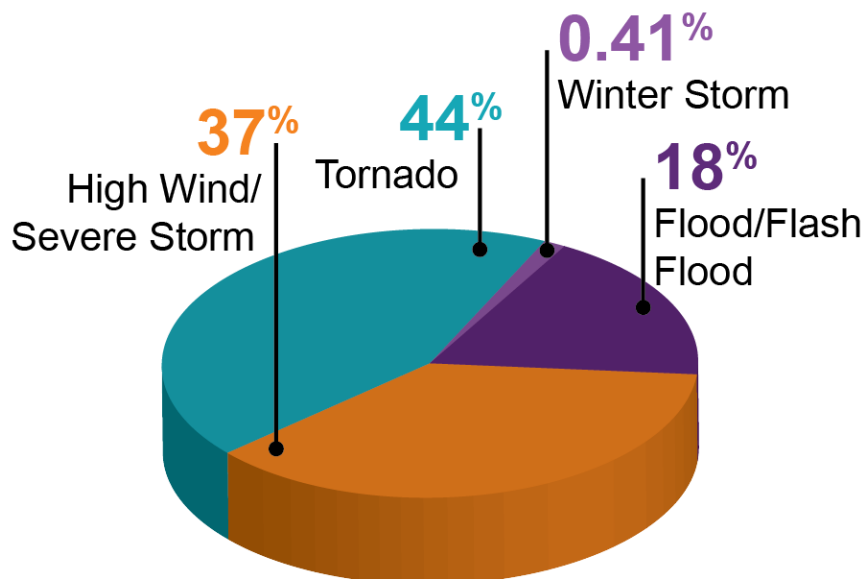


Figure 2: Property Damage Percentages from Natural Hazard Events

## Natural Hazard Risk Ranking

**Table 2: Ranking of Natural Hazards by Risk**

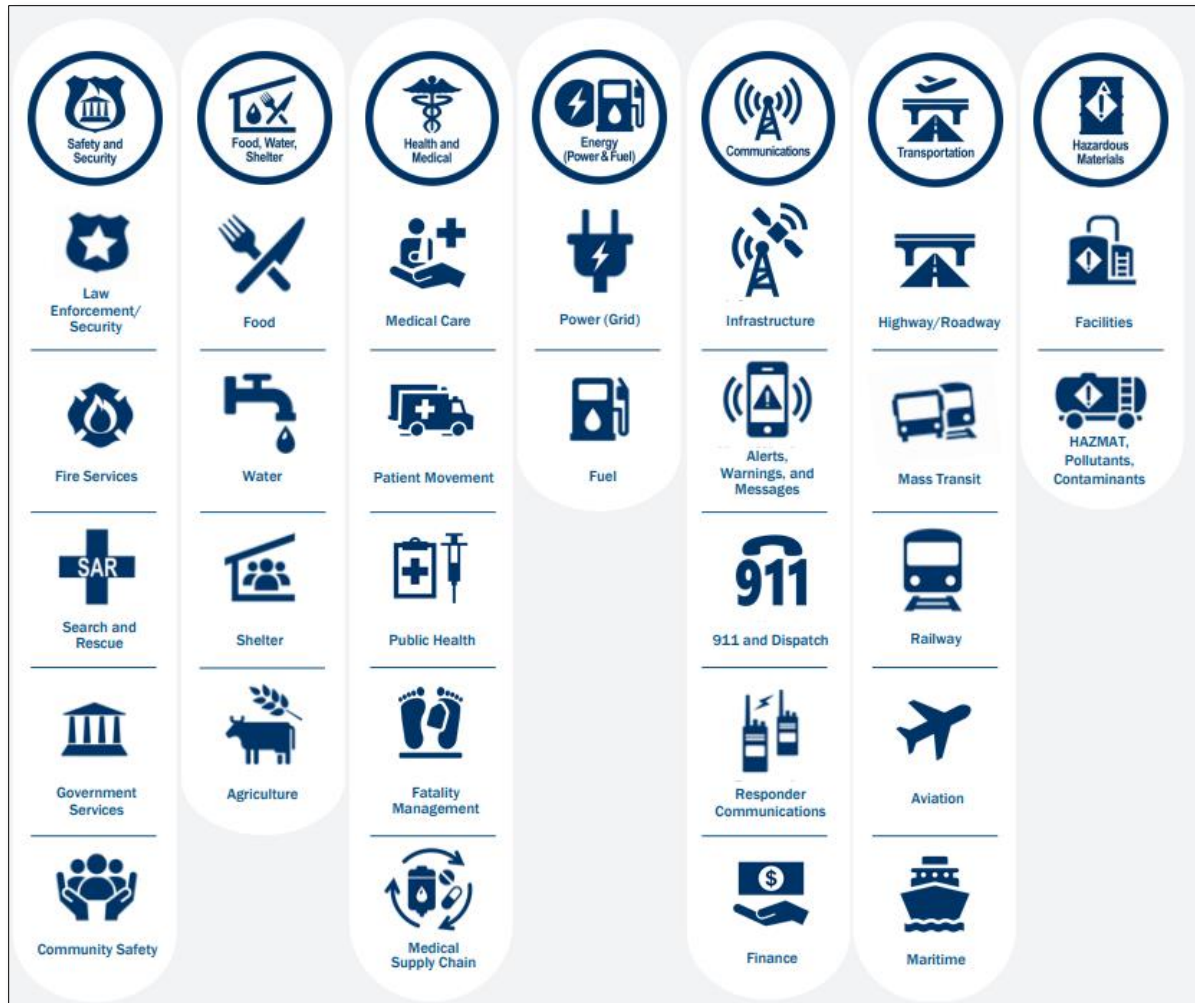
| Hazard                         | Hazard Ranking |
|--------------------------------|----------------|
| Winter Storm                   | High           |
| Flood/Flash Flood              | High           |
| High Wind/Severe Storm         | High           |
| Dam Failure                    | Medium         |
| Tornado                        | Medium         |
| Extreme Temperatures           | Medium         |
| Drought                        | Medium         |
| Earthquake                     | Medium         |
| Wildfire                       | Low            |
| Karst/Sinkhole/Land Subsidence | Low            |
| Landslide                      | Low            |

## Community Lifelines and Respective Critical Assets

**Table 3: Number of Critical Assets for Community Lifelines/Sector**

| Lifeline/Sector      | Number of Assets |
|----------------------|------------------|
| Safety and Security  | 561              |
| Food, Water, Shelter | 10               |
| Health and Medical   | 8                |
| Energy               | 16               |
| Communications       | 8                |
| Transportation       | 1,025            |
| Hazardous Materials  | 437              |
| Education            | 402              |
| Cultural/Historical  | 91               |
| High Hazard Dams     | 26               |

A lifeline enables the continuous operation of government and business functions which are critical for human health, safety, or economic security. Lifelines are the most fundamental services for a community that, when stabilized, enable all other aspects of society to function. These lifelines are assets that may be a facility, infrastructure, operation, or entity.



**Figure 3: Community Lifeline Components**

### *Community Lifelines Outlined*

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

## Mitigation Capabilities Summary

**Table 4: Capability Assessment Summary Ranking for Fairfax County**

| Capability                   | Ranking  |
|------------------------------|----------|
| Planning and Regulatory      | High     |
| Administrative and Technical | High     |
| Safe Growth                  | High     |
| Financial                    | Moderate |
| Education and Outreach       | Moderate |

## Hazard Mitigation Plan Points of Contact

**Table 5: Points of Contact Information**

| Contact Type               | Contact information   |
|----------------------------|---|
| Primary Point of Contact   | <p>Greg Zebrowski, Assistant Coordinator of Planning and Policy Analysis<br/>           Department of Emergency Management and Security<br/>           571-350-1000   TTY 711<br/> <a href="mailto:Gregory.Zebrowski@fairfaxcounty.gov">Gregory.Zebrowski@fairfaxcounty.gov</a><br/>           4890 Alliance Dr.<br/>           Fairfax, VA 22030</p> |
| Secondary Point of Contact | <p>Cara Howard, Lead Planner<br/>           Department of Emergency Management and Security<br/>           571-350-1010   TTY 711<br/> <a href="mailto:Cara.Howard@fairfaxcounty.gov">Cara.Howard@fairfaxcounty.gov</a><br/>           4890 Alliance Dr.<br/>           Fairfax, VA 22030</p>   |

## Fairfax County

This annex presents the following jurisdiction-specific information provided by Fairfax County for the 2022 update to the *Northern Virginia Hazard Mitigation Plan (NOVA HMP)*.

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# 1. Jurisdiction Profile

---

|                         |                                      |
|-------------------------|--------------------------------------|
| Incorporated Towns      | 3                                    |
| Population              | 1,171,848                            |
| Geographic Region       | Piedmont/Coastal Plain               |
| Persons Per Household   | 2.79                                 |
| Persons Per Square Mile | 2,941.8                              |
| Median Age              | 38.4                                 |
| Elevations              | Near sea level (~0 feet) to 500 feet |

## 1.1. Location

Located in the northeast region of the Commonwealth of Virginia, Fairfax County is part of the suburban ring of Washington, D.C. The County is partially bounded on the north and east by Arlington County and the cities of Alexandria and Falls Church. Fairfax County shares a border with Loudoun County to the west and Prince William County and the City of Manassas to the south. The Potomac River forms the County's northern and southeastern borders. Across the Potomac to the north is Montgomery County, Maryland and to the southeast are Prince George's County and Charles County, Maryland.

## 1.2. History

The land that is now Fairfax County was originally part of the Northern Neck Proprietary granted by King Charles II in 1649 and inherited by Thomas Fairfax, Sixth Lord Fairfax of Cameron, in 1719. The County itself was formed in 1792 from Prince William County.

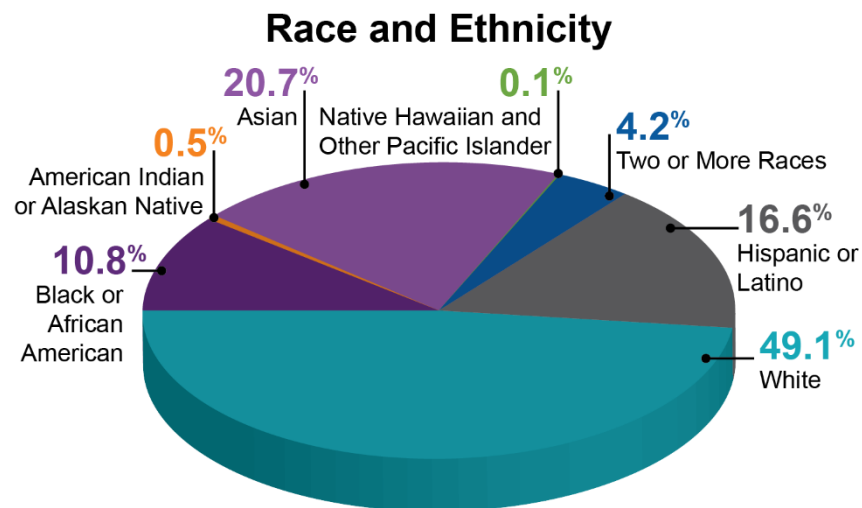
Fairfax County is located directly across the Potomac River from Washington, D.C. Due to its location on both the Virginia piedmont and the Atlantic coastal plain, the County experiences a variety of weather. The diversity of Fairfax County's landscape increases its vulnerability to a variety of hazards, most notably flooding and severe storms. In addition to snowmelt and rain-related river flooding episodes, low-lying areas of Fairfax County along the Potomac River are also subject to tidal and storm surge flooding. As sea levels rise, permanent inundation of low-lying areas along and near the river shoreline is also a threat. Additionally, winter storms pose significant threats, as evidenced during the 2015–2016 winter season when snow levels in late January reached between 23 and 31 inches across the County and ice and blizzard-related wind conditions impacted travel and caused power outages and property damage.

## 1.3. Demographics, Economy, and Governance

The Northern Virginia regional profile is presented in [Section 1, Base Plan](#) as context for the entire plan. The 2020 U.S. Census population estimate for Fairfax County was 1,150,309, which represents an approximate 6.6% increase since 2010. The County is densely populated with approximately 2,886 residents per square mile. The following section summarizes Fairfax County's demographic, economic, and governance characteristics.

**Table 6: Population and Growth Rate**

| Year | Population | Annual Percent Increase |
|------|------------|-------------------------|
| 1970 | 455,021    |                         |
| 1980 | 596,901    | 31.18%                  |
| 1990 | 818,584    | 37.14%                  |
| 2000 | 969,749    | 18.47%                  |
| 2010 | 1,081,699  | 11.55%                  |
| 2020 | 1,150,309  | 6.6%                    |

**Figure 4: Race and Ethnicity Demographics from 2020 Census\***

\*Due to how people view Race and Ethnicity and answer the questions in the Census, there is overlapping of responses and results equal greater than 100% of the population.

**Table 7: Economic Data**

| Economy                            | Data      |
|------------------------------------|-----------|
| Median Household Income (2019)     | \$128,374 |
| Unemployment Rate (September 2021) | 3.7%      |
| Per Capita Income (2020)           | \$58,338  |
| Percentage Below Poverty (2020)    | 6.1%      |

Fairfax County has been among the highest median income counties in the United States for many years. Despite this statistic, approximately 13.5% of persons aged 18 and older, 8.3% of children under 18 years, and 9.6% of persons aged 5 and older who speak a language other than English at home live in poverty.

The County's location in the Washington metropolitan area, its ease of access by car and public transportation, and its highly skilled labor force continue to attract an increasingly economically varied

residential and commercial mix. Much of the commercial development in Fairfax County is centered around the Metrorail's Silver Line with stations in Reston and Tysons. In 2020, Fairfax County ranked second in the United States for suburban office space, with more than 119 million square feet of office space and 3.5 million square feet newly leased in 2020. In addition, the County has more than 39 million square feet of industrial and flex space.

Eleven Fortune 500 corporations maintain their headquarters in Fairfax County, including Volkswagen, Hilton, and Capital One. Several U.S. defense and aerospace industries, including Bechtel, General Dynamics, Leidos, Northrup Grumman, Raytheon, and Leidos (formerly SAIC), as well as federal government offices, are also headquartered in the County.

## 1.4. Built Environment and Community Lifelines

The information related to Community Lifelines and critical assets in Fairfax County presented in this section has been collected from multiple sources, including the Fairfax County Department of Emergency Management and Security, Hazus (Version 4.2), and county government websites. Data extracted from the Hazus Level 1 assessment indicates that Fairfax County has an estimated total of 2,084 Community Lifelines and critical assets. Due to the diversity of methods for collecting and verifying data and the method of documenting location and jurisdiction used in Hazus, this data may not fully reflect the current inventory maintained by Fairfax County.

Table 8 provides a summary of the number of critical assets by type. Fairfax County maintains a detailed list of Community Lifeline facilities, sites, and critical assets.

**Table 8: Number of Assets per Community Lifeline/Sector**

| Lifeline/Sector          | Number of Assets |
|--------------------------|------------------|
| Safety and Security      | 61               |
| Food, Water, and Shelter | 10               |
| Health and Medical       | 8                |
| Energy                   | 16               |
| Communications           | 8                |
| Transportation           | 1,025            |
| Hazardous Materials      | 437              |
| Education                | 402              |
| Cultural/ Historical     | 91               |
| High Hazard Dams         | 26               |

### 1.4.1. Safety and Security

As of April 2021, based on Hazus data, Fairfax County has 42 fire stations (including the Fire Rescue Academy) and 15 police stations. In addition, there are four Emergency Operations Centers.

### 1.4.2. Food, Water, Shelter

Food commodities are available throughout Fairfax County from public retail providers, wholesalers, and contracted services for specific institutions and facilities. Additional contracts may be entered into for post-disaster needs.

Fairfax County provides water and wastewater services through multiple utilities, including Fairfax Water (serving an estimated 2 million residents in Fairfax, Falls Church, and other areas), and the Fairfax County Department of Public Works and Environmental Services, which includes interjurisdictional agreements with DC Water, Prince William Service Authority, AlexRenew, and the Upper Occoquan Service Authority for the provision of Wastewater Treatment Service. In addition, the Town of Herndon and the Town of Vienna provide water and sewer services for Fairfax County residents. The Hazus database lists ten water and wastewater treatment facilities in Fairfax County.

The Hazus database does not identify schools that might be designated as public shelters.

### *1.4.3. Health and Medical*

The Hazus data identifies eight health and medical facilities offering patient care, urgent care, emergency rooms, and other healthcare services in Fairfax County, including the following five hospitals:

- Fort Belvoir Community Hospital
- Inova Fair Oaks Hospital
- Inova Fairfax Hospital
- Inova Mount Vernon Hospital
- Reston Hospital Center

### *1.4.4. Energy*

The Hazus database identifies 16 energy assets. Power providers in Fairfax County include Dominion Energy Virginia, Northern Virginia Electric Cooperative (NOVEC), Washington Gas, and Columbia Gas of Virginia. In addition to power providers, several natural gas pipelines cross the County, including those for Colonial, Columbia Gas, Cove Point, Dominion, and Transcontinental.

### *1.4.5. Communications*

Most communications and information systems and infrastructure in the United States are privately owned; however, the County maintains authority and control over public safety communications for fire, police, and other responding agencies. The Hazus database identifies eight communications assets. In recent years, the federal government has assumed a stronger role in protecting information and communications infrastructure, which may also present a challenge in relation to disaster impacts. Increasing reliance on this infrastructure by individuals, businesses, and government could cause vulnerabilities that emergency managers should take into consideration in pre- and post-incident planning and operations.

### *1.4.6. Transportation*

Fairfax County is served by the following major highways and commuter and rail lines:

- Interstates: 66, 95, 395, 495 (Capital Beltway)
- U.S. Highways: 1, 7, 28, 29, 50
- George Washington Memorial Parkway and Fairfax County Parkway
- Washington Metrorail: Orange, Blue, Yellow, and Silver lines
- Virginia Railway Express (VRE)

The Amtrak rail system connects at VRE stations for rail service beyond the Northern Virginia area.

The maintenance of transportation facilities and systems is the responsibility of the owner or entity with authority, including municipal, county, state, and federal highway departments, and agencies; toll and rail authorities; and the military. The Virginia Department of Transportation (VDOT) maintains most primary and secondary roads in Fairfax County, except for the Dulles Toll Road, which is under the authority of the Metropolitan Washington Airports Authority (MWAA), and the George Washington Memorial Parkway, which is under the authority of the National Park Service.

The Hazus database notes a total of 1,025 transportation structures, facilities, or segments, including the following:

- Highway Bridges – 684
- Highway Segments – 204
- Railway bridges – 35
- Railway Facilities and Segments – 68
- Light Rail Facilities and Segments – 23
- Bus Terminals – 1
- Ports (including public and private wharves and marinas) – 5
- Airport Facilities – 5

#### *1.4.7. Hazardous Materials*

The Hazus database identifies 1 oil refinery, 1 natural gas facility, and 13 natural gas pipeline locations within Fairfax County. In addition, as of November 2021, there are 422 active Emergency Planning and Community Right-to-Know Act (EPCRA) facilities in the County, including Fairfax City, for a total of 437 sites or facilities.

#### *1.4.8. Education*

Fairfax County has one of the largest public-school districts in the United States, with 198 pre-K–12 grade schools and centers and a diverse student population of 178,000 students. More than 27% of these students are considered economically disadvantaged and more than 26% of students learn English as a second language.

In addition to these public and private educational facilities within Fairfax County, there are 35 college and university facilities located within its jurisdictional boundaries, including the following:

- Fairfax University of America
- George Mason University
- Northern Virginia Community College – Annandale Campus
- Stratford University
- University of the Potomac – Virginia Campus
- Virginia International University

### 1.4.9. Recreational, Cultural and Historic Sites, and Assets

The Fairfax County Park Authority (FCPA) develops and maintains the community's park system to support recreation and the residents' health through the preservation of environmentally sensitive land and resources and areas of historic significance, as well as through the provision of recreational facilities and services.

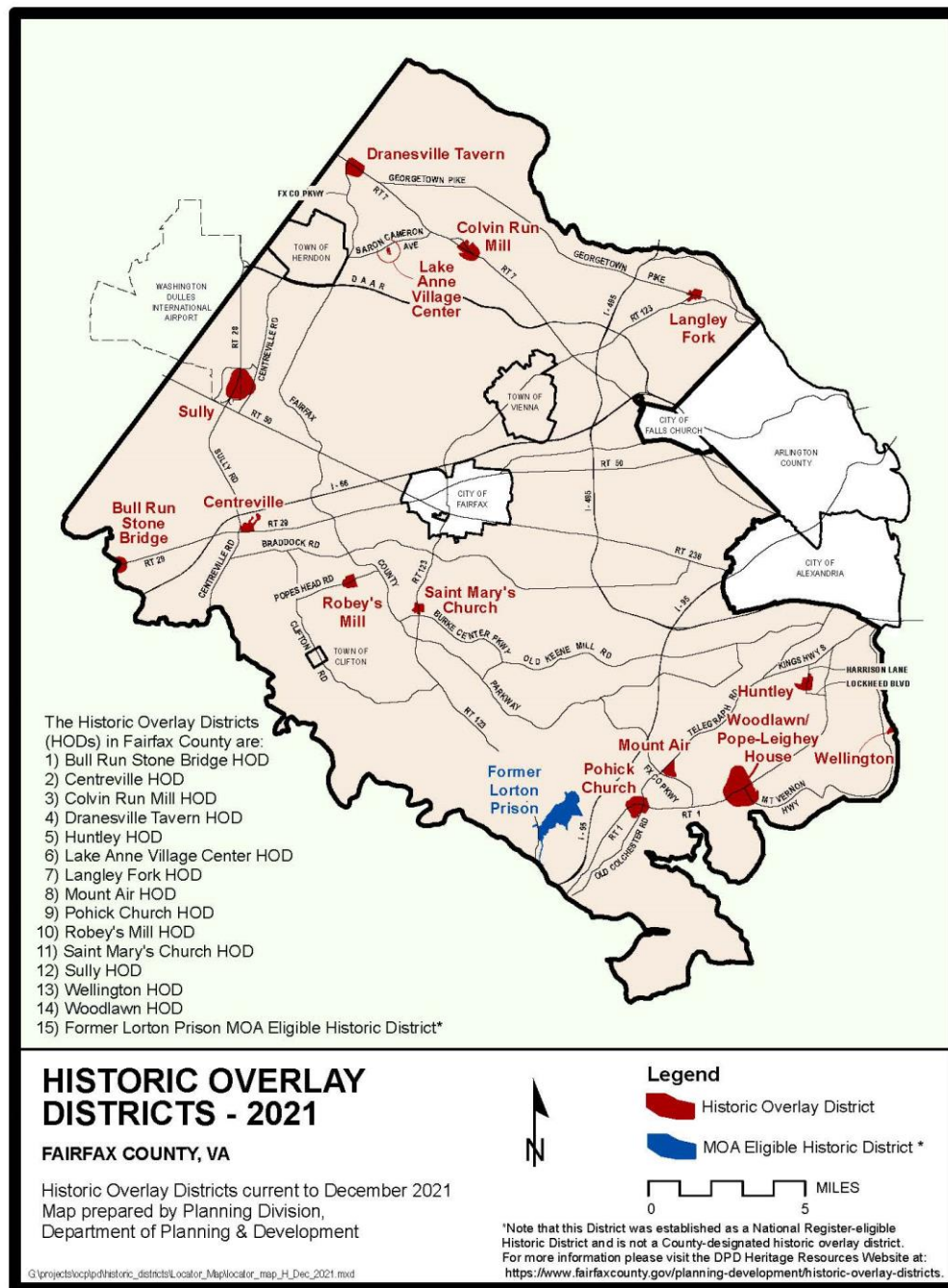
**Table 9: Assessment of Community Park Assets & Potential Hazard Impacts, Fairfax County Park<sup>1</sup>**

| Category            | Community Park Asset/What May Be Impacted by Hazard(s)?   | Which Hazard(s)  |
|---------------------|---|--|
| Natural Environment | <ul style="list-style-type: none"> <li>23,000+ acres of parkland</li> <li>Landholdings including large, biodiverse forests along the Potomac Gorge and in the western region of the County, emergent wetlands at Huntley Meadows, a tidal freshwater marsh on Mason Neck, and nearly all of Fairfax County's stream valleys.</li> </ul> | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Economic loss of funding</li> </ul>                    |
| Natural Environment | <ul style="list-style-type: none"> <li>427 parks</li> <li>334 miles of trails</li> <li>11 dog parks</li> <li>715 athletic fields (maintained)</li> <li>10 lakefront parks and/or parks with significant ponds/lakes (including 3 managed dam systems)</li> </ul>  | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |
| Natural Environment | <ul style="list-style-type: none"> <li>Air, water, soil, natural habitat, natural vegetative communities, and the ecosystems they form.</li> <li>Inventory includes protective species of rare or significant resources.</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |
| Economy             | <ul style="list-style-type: none"> <li>FCPA employees: 1,740 merit and/or non-merit staff</li> </ul>  | <ul style="list-style-type: none"> <li>Pandemic effects on staffing</li> </ul>   |
| Economy             | <ul style="list-style-type: none"> <li>Recreation and Parks</li> <li>Historic and Natural Preservation</li> <li>Facilities and Support</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |
| Population          | <ul style="list-style-type: none"> <li>Fairfax County population 1.1 million</li> <li>90% of residents live less than half a mile away from parkland</li> <li>14+ million park visitors each year</li> <li>1.6 million Recreation Center visits per year</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Economic loss of funding</li> </ul>  |

<sup>1</sup> Fairfax County Park Authority

| Category          | Community Park Asset/What May Be Impacted by Hazard(s)?   | Which Hazard(s)  |
|-------------------|---|--|
| Population        | <ul style="list-style-type: none"> <li>Clemyjontri Park offers recreation to children with all abilities</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul>                                       |
| Built Environment | <ul style="list-style-type: none"> <li>9 Recreation Centers</li> <li>1 Waterpark</li> <li>7 Golf Courses</li> <li>5 Natural Resource areas</li> <li>13 Natural and Historic structures in the Resident Curator Program</li> </ul> | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |
| Built Environment | <ul style="list-style-type: none"> <li>Bathhouses and maintenance shops and storage facilities</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |
| Built Environment | <ul style="list-style-type: none"> <li>Herrity Building headquarters, managed by County Facilities Management Department</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |
| Built Environment | <ul style="list-style-type: none"> <li>Historic Properties</li> <li>Natural preservation sites</li> <li>Artifacts and archeology inventory</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |
| Built Environment | <ul style="list-style-type: none"> <li>Park Planning has several development and renovation projects in planning</li> </ul>   | <ul style="list-style-type: none"> <li>Natural Hazards</li> <li>Pandemic effects on staffing</li> <li>Vandalism</li> <li>Economic loss of funding</li> </ul> |

Fairfax County maintains a master list of 91 historic sites and assets of special architectural, historic, archaeological, or cultural value to residents and visitors. These sites are designated by the National Register of Historic Places, Virginia Landmarks Register, and/or the Historic Overlay District. Historic assets are addressed in the County's Comprehensive Plan. The County recognizes 13 Historic Overlay Districts under the Zoning Ordinance to provide regulations over and above the regular zoning protection to prevent the destruction of or encroachment upon such areas and structures and to prevent the creation of environmental influences adverse to the purposes of these assets. These sites serve as assets by providing significant context to the County's development over time and contributing to the community's tourism economy.

Figure 5: Historic Overlay Districts, 2021<sup>2</sup>

<sup>2</sup> [Fairfax County Department of Planning and Development](https://www.fairfaxcounty.gov/planning-development/sites/planning-development/files/Assets/Documents/historic/locator_map_all_districts.jpg) ([https://www.fairfaxcounty.gov/planning-development/sites/planning-development/files/Assets/Documents/historic/locator\\_map\\_all\\_districts.jpg](https://www.fairfaxcounty.gov/planning-development/sites/planning-development/files/Assets/Documents/historic/locator_map_all_districts.jpg))

## 1.5. Growth and Development Trends

The County's population grew rapidly during the 1950s and 1960s, more than doubling during those decades. Since 1970, the rate of population growth has declined each year. However, between 2010 and 2020, the population grew at a rate of 6.3%.

Over the past few decades, Fairfax County has been transformed from a residential suburb of Washington, D.C., to a vital commercial, residential, office, and research hub. This substantial change has been reflected in the jurisdiction's land use pattern with the vast expansion of non-residential land uses, and, to a lesser extent, growth in residential land use by acre. Since 1990, the rate of multi-family townhouses and apartments has exceeded single-family detached housing construction at a rate of two to one. As of December 2020, there was a planned 2.7 million square feet of office space under construction in the County.<sup>3</sup>

This rate of growth has significantly impacted public facilities and infrastructure, particularly in terms of transportation capacity and a reduction in the supply of vacant land. The increased demand for future development and infrastructure may result in pressure to build in inappropriate areas susceptible to impacts from natural hazards such as floods. Land use controls through the County's ordinances and regulations provide some protection against this pressure but should be continuously monitored for new demands that could increase hazard risks in the future.

Despite the overall slowing growth rate, the 2050 forecast for population, housing units, and households indicates slight growth. Much of the population growth is related to continuing development of multi-family housing, including owned and rental properties.

| Year |           | Population             |                         |                            | Total Housing Units | Households     |                         |                            |
|------|-----------|------------------------|-------------------------|----------------------------|---------------------|----------------|-------------------------|----------------------------|
|      |           | Total                  | Average Annual Increase | Average Annual Growth Rate |                     | Total          | Average Annual Increase | Average Annual Growth Rate |
| 1970 | Estimates | 454,300 <sup>1</sup>   | --                      | --                         | 130,800             | 126,500        | --                      | --                         |
| 1975 |           | 537,200                | 16,600                  | 3.4%                       | 173,000             | 166,400        | 8,000                   | 5.6%                       |
| 1980 |           | 596,900                | 11,900                  | 2.1%                       | 215,600             | 205,200        | 7,800                   | 4.3%                       |
| 1985 |           | 668,300                | 14,300                  | 2.3%                       | 247,800             | 238,500        | 6,700                   | 3.1%                       |
| 1990 |           | 818,600                | 30,100                  | 4.1%                       | 302,500             | 289,000        | 10,100                  | 3.9%                       |
| 1995 |           | 879,400                | 12,200                  | 1.4%                       | 328,200             | 317,000        | 5,600                   | 1.9%                       |
| 2000 |           | 969,700                | 18,100                  | 2.0%                       | 359,000             | 353,100        | 7,200                   | 2.2%                       |
| 2005 |           | 1,033,600              | 12,800                  | 1.3%                       | 385,600             | 376,700        | 4,700                   | 1.3%                       |
| 2010 |           | 1,081,700 <sup>2</sup> | 9,600                   | 0.9%                       | 396,400             | 386,100        | 1,900                   | 0.5%                       |
| 2015 |           | 1,125,400              | 8,700                   | 0.8%                       | 412,200             | 403,900        | 3,600                   | 0.9%                       |
| 2016 |           | 1,131,900              | 6,500                   | 0.6%                       | 413,700             | 402,400        | -1,500                  | -0.4%                      |
| 2017 |           | 1,142,900              | 11,000                  | 1.0%                       | 415,700             | 405,800        | 3,400                   | 0.8%                       |
| 2018 |           | 1,152,900              | 10,000                  | 0.9%                       | 418,300             | 409,600        | 3,800                   | 0.9%                       |
| 2019 |           | 1,167,000              | 14,100                  | 1.2%                       | 421,100             | 415,300        | 5,700                   | 1.4%                       |
| 2020 |           | <b>1,171,800</b>       | <b>4,800</b>            | <b>0.4%</b>                | <b>424,100</b>      | <b>417,500</b> | <b>2,200</b>            | <b>0.5%</b>                |
| 2025 | Forecasts | 1,209,800              | 7,600                   | 0.6%                       | 441,400             | 434,100        | 3,300                   | 0.8%                       |
| 2030 |           | 1,249,100              | 7,900                   | 0.6%                       | 459,100             | 451,000        | 3,400                   | 0.8%                       |
| 2035 |           | 1,282,500              | 6,700                   | 0.5%                       | 474,200             | 465,600        | 2,900                   | 0.6%                       |
| 2040 |           | 1,317,300              | 7,000                   | 0.5%                       | 489,900             | 480,700        | 3,000                   | 0.6%                       |
| 2045 |           | 1,350,600              | 6,700                   | 0.5%                       | 504,800             | 495,100        | 2,900                   | 0.6%                       |
| 2050 |           | 1,385,700              | 7,000                   | 0.5%                       | 520,500             | 510,100        | 3,000                   | 0.6%                       |

**Figure 6: Estimates and Forecasts of Population, Housing Units, and Households, Fairfax County (1970–2050)<sup>4</sup>**

The *Comprehensive Plan for Fairfax County, Virginia*, 2017 edition, highlights the intent for appropriate residential development of land in relation to flood hazards, as stated in Objective 7, Policy a: "Prohibit new residential structures within flood impact hazard areas." This objective, in combination with land use

<sup>3</sup> [Real Estate Report, Fairfax County Economic Development Authority, Year-End 2020](https://www.fairfaxcountyped.org/wp-content/uploads/2021/07/Yearend2020RealEstateReport.pdf), December 31, 2020. (<https://www.fairfaxcountyped.org/wp-content/uploads/2021/07/Yearend2020RealEstateReport.pdf>)

<sup>4</sup> Demographic Reports: 2020, Fairfax County

ordinances and the Floodplain Management Plan, provides some controls that restrict the increase of flood hazard risk caused by future development.

Land development in Fairfax County is monitored and controlled at the County level. Fairfax County will continue to partner with local jurisdictions and regional entities to plan and identify hazard mitigation opportunities that reduce risk.

Projected growth trends should be monitored in the next planning cycle with the intent of providing a more detailed statistical analysis of vulnerable populations and how these trends could potentially impact hazard consequences and mitigation opportunities.

## 2. Jurisdiction Planning Process

For the 2022 NOVA HMP update, Fairfax County followed the planning process described in [Section 2, Base Plan](#). In addition to providing representation to the Northern Virginia Hazard Mitigation Planning Team, the County supported the local planning process requirements by coordinating with representatives from other departments and agencies within its jurisdiction.

**Figure 7: Local Planning Group Participants**

| Name                 | Position/Title                                      | Department/Agency  |
|----------------------|---|--|
| John Brusch          | Patrol Bureau Aid/Lieutenant                        | Fairfax County Police Department                                     |
| Avery Church         | County Continuity Program Manager                   | Fairfax County Department of Emergency Management and Security       |
| Mark Dale            | Lieutenant  | Town of Herndon Police Department                                    |
| Ian Gregoire         | Emergency Management Specialist                     | Fairfax County Fire and Rescue Department                            |
| James Heflin         | Communications Operations Manager                   | Fairfax County Department of Public Safety Communications            |
| Alison Homer         | Senior Community Specialist/Planner IV              | Fairfax County Office of Environment and Energy Coordination         |
| Daniel Janickey      | Deputy Chief  | Town of Vienna Police Department                                     |
| Kimberly Malejko     | Program Manager                                     | Fairfax County Park Authority  |
| Matthew Marquis      | Regional Planner                                    | Fairfax County Department of Emergency Management and Security       |
| Scott Meyer          | Emergency Management Coordinator                    | Fairfax County Land Development Services                             |
| Matt Meyers          | Division Manager                                    | Fairfax County Office of Environmental and Energy Coordination       |
| Redic Morris         | Strategic Planning Manager                          | Fairfax County Department of Public Safety Communications            |
| Stephanie Nikola     | Emergency Planning Coordinator                      | Fairfax County Health Department                                     |
| Jonathan Ortiz       | Supervisor, Emergency Response Preparedness Section | Fairfax County Sheriff's Office                                      |
| Juan Reyes           | Assistant Director                                  | Fairfax County Department of Public Works and Environmental Services |
| Paul Ruwe            | Deputy Chief  | Fairfax County Fire and Rescue Department                            |
| Laurel Shultzaberger | Safety and Emergency Management Coordinator         | Fairfax County Department of Public Works and Environmental Services |
| Jason Thompson       | DEMS Liaison and ICS Coordinator                    | Fairfax County Police Department                                     |

| Name               | Position/Title  | Department/Agency                                   |
|--------------------|-----------------|---|
| Nathaniel Wentland | Deputy Director | Fairfax County Department of Information Technology |

The jurisdiction identified its chief hazard mitigation planning responsibility as providing oversight in the planning process and representation in the Emergency Managers Group. The County also identified the following tasks as part of its mitigation planning responsibilities:

- Management support for the planning effort
- Planning Group resource/subject matter expert
- Hazard risk and vulnerability assessment
- Provide technical data and hazard information
- Capabilities assessment
- Mitigation strategy development
- Sponsor mitigation actions
- Review plan drafts and provide input
- Public outreach activities
- Implementation of the plan
- Maintaining the plan

Fairfax County planning participants coordinated primarily by means of virtual meetings during the planning process and, as needed, independently to carry out planning activities, which were completed through a series of worksheets that provide background information on the history of hazard events, hazard risks and vulnerabilities, capabilities, and past mitigation efforts. Additional planning process documentation of the Planning Group meetings is included in the [Base Plan, Appendix A](#).

## 2.1. Public Participation

Several opportunities for public involvement were provided during the planning process, including a Public Hazard Survey and access to the draft plan for review and input.

The survey was opened on August 8<sup>th</sup>, 2021, and closed on November 3<sup>rd</sup>, 2021, with over 1,000 responses coming in over that period of time. Fairfax County had 598 responses from those who live inside their borders, the towns of Herndon (15 responses), Venna (28 responses), and Clifton had a few responses from those that work in the town but do not live there.

There were two (2) questions that received almost the identical answers from everyone that took the survey, and those responses identified the natural hazard of climate change and the non-natural hazard of the pandemic to be the most concerning hazards for those who resided in the Northern Virginia Area.

In addition to the survey, the public was offered the opportunity to review and provide input on the Draft 2022 Plan update. Notification of the Draft Plan release was made through the same county web link. Documentation of the public survey and draft plan review is included in [Attachment 2](#) of this annex.

### 3. Jurisdiction-Specific Hazard Event History

Fairfax County's comprehensive hazard history is described in [Section 5, Base Plan](#). The diversity of the landscape increases the vulnerability to a variety of hazards, most notably flooding and severe storms.

There are three major types of flooding in Fairfax County. The most common type of flooding in the County is urban or pluvial flooding, which occurs when heavy precipitation combined with impervious surface coverage results in an overwhelmed drainage system that floods neighborhoods and roads. A second type is riverine or fluvial flooding, which occurs when rivers, streams, and other water bodies overflow their banks into adjacent floodplains. A third type is tidal or coastal flooding, where low-lying areas of the County along the Potomac River are inundated due to tidal and storm surge flooding. Coastal storm surge flooding occurs when extreme storms push water up the Potomac River onshore. As sea levels rise, increased inundation of low-lying areas along and near the river shoreline is a threat. Additionally, winter storms pose significant threats, as evidenced during the 2015–2016 winter season, which resulted in a Federal Disaster Declaration. Winter storms are projected to decrease in frequency in the future as temperatures increase, but occasional winter storms may continue to occur.

The National Oceanic and Atmospheric Administration (NOAA) National Center for Environmental Information (NCEI) Storm Events Database includes 1,478 recorded natural meteorological events that took place in the County between January 1, 1950, and May 2021. The County was included in three Federal Disaster Declarations and emergencies between 2017 and May 2021.

**Table 10: Federal Disaster and Emergency Declarations (2017–2021), Fairfax County<sup>5</sup>**

| Declaration | Date      | Hazard             | Assistance Type                          |
|-------------|-----------|--------------------|--|
| DR 4512     | Apr. 2020 | COVID-19 Pandemic  | Individual Assistance, Public Assistance |
| EM 3448     | Mar. 2020 | COVID-19 Pandemic  | Public Assistance (Category B)           |
| EM 3403     | Sep. 2018 | Hurricane Florence | Public Assistance (Category B)           |

The Fairfax County Planning Team submitted the following additional details related to significant hazard events since the 2017 plan.

**Table 11: Significant Hazard Events Identified by Fairfax County (2017–2021)**

| Date      | Hazard                   | Event and Description  |
|-----------|--------------------------|--|
| July 2019 | Severe Storm/Flash Flood | A microburst storm cell made its way from the northwest to the southeastern portion of the County. Up to 5.5 inches of rain was reported to have fallen within a 3-hour period. Damage to county facilities was minimal. Damage to residential property was moderate in the Dranesville, Mason, and Mt. Vernon districts. Roads near Pimmit Run sustained damage or were washed out. No injuries or casualties were reported. Damages were approximately \$20,000,000. |
| July 2018 | Severe Storm/Tornado     | A major thunderstorm came through the eastern part of the County. An EF0 tornado struck Thomas Jefferson High School and tracked north towards Little River Turnpike.  |

<sup>5</sup> FEMA

|            |              |   |
|------------|--------------|---|
|            |              | Damage was minimal and proximal to the high school grounds. Damages were approximately \$10,000.  |
| March 2018 | Severe Storm | A large cold front that was a part of a larger Nor'easter system brought high sustained winds and gusts. Damage to county facilities was minimal. Damage was sustained to utility infrastructure, with 33% of the County reporting power outages. Four responders were injured, one seriously. No fatalities were reported. Damages were approximately \$250,000. |

## 4. Hazard Risk Ranking

After developing hazard profiles, the Fairfax County Planning Group conducted a two-step quantitative risk assessment for each hazard that considered population vulnerability, geographic extent/location, probability of future occurrences, and potential impacts and consequences. The numerical scores for each category were totaled to obtain an Overall Risk Score, which is summarized as one of these risk and vulnerability classifications:

- **Low:** Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
- **Medium:** The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating. The potential damage is more isolated and less costly than a widespread disaster.
- **High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

The two-step hazard risk ranking methodology is detailed in [Section 4, Base Plan](#).

The Overall Risk Score for each hazard served as the basis for determining whether a vulnerability assessment should be conducted. Natural hazard profiles are presented in the hazard sub-sections in [Section 5, Base Plan](#), and local details are provided in the Jurisdiction Annexes. Non-natural hazard profiles are presented in [Volume II of the Base Plan](#).

**Table 12: Hazard Risk Ranking Summary: Natural Hazards**

| Hazard                         | Total Probability Score | Total Consequence Score | Overall Risk Score | Hazard Ranking |
|--------------------------------|-------------------------|-------------------------|--------------------|----------------|
| Winter Storm                   | 3.7                     | 3.5                     | 7.2                | High           |
| Flood/Flash Flood              | 1.7                     | 4.2                     | 5.9                | High           |
| High Wind/Severe Storm         | 2.7                     | 3.2                     | 5.8                | High           |
| Dam Failure                    | 1.0                     | 4.5                     | 5.5                | Medium         |
| Tornado                        | 1.3                     | 4.2                     | 5.5                | Medium         |
| Extreme Temperatures           | 2.7                     | 2.5                     | 5.2                | Medium         |
| Drought                        | 2.0                     | 3.2                     | 5.2                | Medium         |
| Earthquake                     | 1.7                     | 3.2                     | 4.9                | Medium         |
| Wildfire                       | 1.0                     | 3.0                     | 4.0                | Low            |
| Karst/Sinkhole/Land Subsidence | 1.0                     | 2.5                     | 3.5                | Low            |
| Landslide                      | 1.0                     | 2.5                     | 3.5                | Low            |

**Table 13: Hazard Risk Ranking Summary: Non-Natural Hazards**

| Hazard                           | Total Probability Score | Total Consequence Score | Overall Risk Score | Hazard Ranking |
|----------------------------------|-------------------------|-------------------------|--------------------|----------------|
| Infectious Disease/Public Health | 3.0                     | 5.8                     | 8.8                | High           |
| Terrorism                        | 1.0                     | 6.4                     | 7.4                | High           |
| Cyber Attack                     | 2.0                     | 4.7                     | 6.7                | High           |
| Civil Unrest                     | 1.3                     | 5.0                     | 6.3                | Medium         |
| Communication Disruption         | 1.3                     | 3.7                     | 5.0                | Medium         |
| Hazardous Materials              | 1.0                     | 3.9                     | 4.9                | Low            |
| Active Violence                  | 1.0                     | 3.6                     | 4.6                | Low            |

Based on the hazard risk scores, Fairfax County evaluated the level of risk for 18 hazards: 11 natural and 7 non-natural.

Eight natural hazards were identified as high or medium risk hazards to which the jurisdiction is vulnerable:

- **High:** Winter Storm, Flood/Flash Flood, and High Wind/Severe Storm
- **Medium:** Dam Failure, Tornado, Extreme Temperatures, Drought, and Earthquake

Five non-natural hazards were ranked as high or medium risk:

- **High:** Infectious Disease/Public Health, Terrorism, and Cyber Attack
- **Medium:** Civil Unrest and Communication Disruption

All other hazards are ranked as “low,” signifying a minimal risk to Fairfax County.

## 4.1. Additional Hazard Risk Considerations

### 4.1.1. Fairfax County Pre-Disaster Recovery Plan

The *Fairfax County Pre-Disaster Recovery Plan (PDRP)* provides a prioritized list of critical infrastructures for consideration during recovery, which can serve as a guide for directing mitigation efforts as well as funding. The PDRP references the critical facilities list contained in this document as a source of critical assets. The *PDRP*, dated April 2020, presents an expanded assessment of hazard risk based on likelihood and potential consequence for use as a planning tool for recovery. Based on this methodology, no hazards are identified as “high” in relation to potential consequence or likelihood.

**Table 14: Comparison of Catastrophic Hazard Likelihood and Consequences<sup>6</sup>**

| Potential Consequence | High Likelihood | Medium Likelihood  | Low Likelihood | No Likelihood |
|-----------------------|-----------------|--|----------------|---------------|
| High                  | N/A             | <ul style="list-style-type: none"> <li>Emerging Infectious Disease</li> <li>Biological attack</li> </ul> | Nuclear Device | N/A           |

<sup>6</sup> Fairfax County Pre-Disaster Recovery Plan, dated April 2020, p. 2–4

|        |   |  |   |  |
|--------|---|--|---|--|
| Medium | <ul style="list-style-type: none"> <li>Hurricane/ Tropical storm wind</li> <li>Major flooding</li> <li>Severe thunder or windstorms</li> <li>Utility failures</li> <li>Infectious disease (not pandemic)</li> </ul>             | <ul style="list-style-type: none"> <li>Chem/bio/rad attack</li> <li>Complex coordinated attack</li> <li>Intentional water contamination</li> <li>Sustained utility outages</li> <li>Tornado (large)</li> </ul> | <ul style="list-style-type: none"> <li>Dam Failure</li> <li>Multi-year drought</li> <li>Earthquake</li> <li>Nuclear reactor attack or accident</li> </ul> | N/A  |
| Low    | <ul style="list-style-type: none"> <li>Extreme heat/ cold</li> <li>Urban fire</li> <li>Improvised or vehicle-borne improvised explosive device (IED/VBIED)</li> <li>Tornado (moderate/small)</li> <li>Winter Weather</li> </ul> | <ul style="list-style-type: none"> <li>Chemical accident</li> <li>Isolated terror attack</li> <li>Coastal erosion</li> <li>Food contamination</li> <li>Riots/civil disturbance</li> <li>Sinkhole</li> </ul>    | <ul style="list-style-type: none"> <li>Livestock disease</li> <li>Drought</li> <li>Landslide</li> <li>Wildfire</li> </ul>                                 | <ul style="list-style-type: none"> <li>Land subsidence</li> <li>Tsunami</li> </ul> |

Additional risk information was provided by Fairfax County in relation to Dam Failures, Flood/Flash Floods, High Winds/Severe Storms, and Winter Storms.

#### 4.1.2. Dam Failure

There are 45 dams located in Fairfax County<sup>7</sup> as documented by Fairfax County Emergency Management and Security (DEMS), 26 of which are classified as **High Hazard** due to the consequences related to potential failure of the structures. DEMS maintains a list of all dams, including their locations, ownership, pool volume, impoundment capacity, and use.

The 26 state-regulated high hazard dams in Fairfax County are both publicly- and privately-owned and utilized for a variety of purposes, including flood control, stormwater management, and recreation.

**Table 15: State Regulated High Hazard Dams in Fairfax County, as of May 2021<sup>8</sup>**

| Dam Name                                      | Dam Owner/Operator                                    |
|---|---|
| Burke Centre 11B Dam                          | Department of Public Works and Environmental Services |
| Carrington Regional Pond, Section 1A          | Department of Public Works and Environmental Services |
| Fairview Lake Dam (also called Holmes Run 2A) | Department of Public Works and Environmental Services |
| Hampton Forest Section 4 Regional Pond        | Department of Public Works and Environmental Services |
| Kings Park West Section 18 Dam                | Department of Public Works and Environmental Services |

<sup>7</sup> Dam Inventory – 2021, Fairfax County Emergency Management and Security

<sup>8</sup> Fairfax County Department of Emergency Management and Security

| Dam Name   | Dam Owner/Operator   |
|--|--|
| Kingstowne Pond 4  | Department of Public Works and Environmental Services        |
| Lake Accotink Confined Disposal Facility                   | Fairfax County Park Authority                                |
| Lake Anne Dam  | Reston Association   |
| Lake Audubon Dam (also called Lower South Lake)            | Reston Association   |
| Lake Barcroft Dam  | Lake Barcroft Watershed Improvement District                 |
| Lake Fairfax Dam   | Fairfax County Park Authority                                |
| Lake Newport Dam   | Reston Association   |
| Lake Thoreau Dam (also called Upper South Lake)            | Reston Association   |
| Occoquan Reservoir – Lower Dam                             | Fairfax County Water Authority, Fairfax Water Griffith Plant |
| Occoquan Reservoir – Upper Dam                             | Fairfax County Water Authority                               |
| Pohick Creek Dam #1 (also called Lake Mercer)              | Department of Public Works and Environmental Services        |
| Pohick Creek Dam #2 (also called Lake Barton)              | Department of Public Works and Environmental Services        |
| Pohick Creek Dam #3 (also called Woodglen Lake)            | Department of Public Works and Environmental Services        |
| Pohick Creek Dam #4 (also called Royal Lake)               | Department of Public Works and Environmental Services        |
| Pohick Creek Dam #7 (also called Lake Braddock)            | Department of Public Works and Environmental Services        |
| Pohick Creek Dam #8 (also called Huntsman Lake)            | Department of Public Works and Environmental Services        |
| Pulte-McLean Pond D67                                      | Department of Public Works and Environmental Services        |
| Reston Northern Sector Pond 1                              | Department of Public Works and Environmental Services        |
| Reston Town Center Western BMP Dam                         | Reston Town Center Association                               |
| Upper Occoquan Dam (also called Polish Pond)               | Upper Occoquan Service Authority                             |
| West Ox Road Regional BMP Dam (Stormwater Management Pond) | Department of Public Works and Environmental Services        |

Fairfax County has a new 2,800-foot-long levee that was completed after the adoption of the 2017 HMP. Huntington Levee, the first in the County, was completed in June 2019 to protect the Huntington community from storms up to and including 100-year flooding events.

The community, built prior to the current floodplain regulations, has been exposed to floods due to tidal surges from the Potomac River and flash flooding from the Cameron Run Watershed. More than 160 homes are situated in the floodplain, all of which are considered to be at risk for future flooding. The U.S.

Army Corps of Engineers conducted a study to consider various options for flood protection and ultimately identified the levee and pumping station as the most cost-effective and sustainable method of managing flood risks. The project received an award from the Institute of Sustainable Infrastructure<sup>9</sup> in 2019.



**Figure 8: Huntington Levee (2019), Fairfax County, Virginia<sup>10</sup>**

#### ***4.1.3. Flood/Flash Flood***

The Fairfax County Planning Team noted the frequency of flash flood incidents has increased in recent years, which is attributed to more frequent intense rainfall events combined with aging drainage and stormwater infrastructure not designed to today's standards. The County is addressing this issue through increased maintenance of drainage systems and capacity upgrades funded through capital improvement projects but highlights the need for additional studies to identify potential locations and the extent of future events.

**Table 16: Flood/Flash Flood Events in Fairfax County, 1950–May 31, 2021<sup>11</sup>**

| Impact                         | Data         |
|--------------------------------|--------------|
| Flood/Flash Flood Events       | 394          |
| Direct Deaths                  | 2            |
| Direct Injuries                | 0            |
| Property Damage                | \$32,418,000 |
| Crop Damage                    | \$35,000     |
| Total Property and Crop Damage | \$32,453,000 |

<sup>9</sup> [Huntington Levee](https://sustainableinfrastructure.org/project-awards/huntington-levee/), April 24, 2019, (<https://sustainableinfrastructure.org/project-awards/huntington-levee/>)

<sup>10</sup> [Fairfax County Public Works and Environmental Services](https://www.fairfaxcounty.gov/publicworks/huntington-levee/) (<https://www.fairfaxcounty.gov/publicworks/huntington-levee/>)

<sup>11</sup> NCEI Storm Events Database

#### 4.1.4. High Wind/Severe Storm

The number of severe storm events and impacts on people, property, and crops are documented in the NCEI Storm Events Database under the categories of hail, high winds, lightning, strong winds, and thunderstorm winds.

**Table 17: High Wind/Severe Storm Events 1950–May 31, 2021<sup>12</sup>**

| Impact                            | Data         |
|-----------------------------------|--------------|
| High Wind and Severe Storm Events | 773          |
| Direct Deaths                     | 3            |
| Direct Injuries                   | 19           |
| Property Damage                   | \$28,658,350 |
| Crop Damage                       | \$52,250     |
| Total Property and Crop Damage    | \$28,710,600 |

#### 4.1.5. Winter Weather

Table 18 presents the number of winter weather events documented in the NCEI Storm Events Database, including blizzards, heavy snow, winter storms, and winter weather.

**Table 18: Winter Weather Events 1950–May 31, 2021<sup>13</sup>**

| Impact                         | Data      |
|--------------------------------|-----------|
| Severe Winter Weather Events   | 148       |
| Direct Deaths                  | 3         |
| Direct Injuries                | 4         |
| Property Damage                | \$315,000 |
| Crop Damage                    | \$0       |
| Total Property and Crop Damage | \$315,000 |

Other hazard information for Fairfax County is presented in the [Base Plan](#).

<sup>12</sup> NCEI Storm Events Database

<sup>13</sup> NCEI Storm Events Database

## 5. Vulnerability Assessment

The methodology for calculating loss estimates presented in this annex is the same as that described in [Section 4, Base Plan](#). Quantitative loss estimates are provided when available. Qualitative measurement considers hazard data and characteristics, including the potential impact and consequences based on past occurrences. Accompanying the data is a discussion of community assets potentially at risk during a hazard event.

The assets at risk were identified during the planning process as potential assets vulnerable to one or more hazards.

### 5.1. National Flood Insurance Program

Fairfax County participates in the National Flood Insurance Program (NFIP). In addition, the County participates in the voluntary Community Rating System (CRS) program under the NFIP with a CRS Class of 6, which is associated with a 20 percent flood insurance discount for policyholders. The *Floodplain Management Plan, Progress Report*, September 2019, describes the 24 mitigation actions related to floods developed since 2006 that were presented in the 2017 NOVA HMP. These actions cover a broad range of project types, including planning and regulatory, structural, natural system protection, and public outreach and education. As of September 2019, the Progress Report provides updates for maintenance of the County's CRS program, which documents continuing progress on the implementation of these actions.

**Table 19: National Flood Insurance Program Status, Fairfax County<sup>14</sup>**

|                         |           |
|-------------------------|-----------|
| Initial FHBM Identified | 5/5/1970  |
| Initial FIRM Identified | 3/5/1990  |
| Current Eff Map Date    | 9/17/2010 |
| Reg-Emer Date           | 1/7/1972  |
| CRS Entry Date          | 10/1/1993 |
| Current Eff Date        | 10/1/2014 |
| CRS Class               | 6         |
| % Disc SFHA             | 20        |
| % Disc Non-SFHA         | 10        |

**Table 20: NFIP Status, as of September 14, 2021<sup>15</sup>**

|                   |              |
|-------------------|--------------|
| Policies in Force | 6,615        |
| Premiums Paid     | \$3,601,181  |
| Total Claims      | 1,260        |
| Total Payment     | \$13,844,072 |

<sup>14</sup> FEMA NFIP Community Status Report, September 9, 2021

<sup>15</sup> Fairfax County Department of Emergency Management and Security

**Table 21: NFIP Status, as of September 14, 2021<sup>16</sup>**

| Category        | NFIP Topic  | Source of Information   | Comments  |
|-----------------|---|---|---|
| Insurance       | How many NFIP policies are in the community? What is the total premium and coverage?  | State NFIP Coordinator or FEMA NFIP Specialist<br>Community Information System Database | 6,615 policies countywide based on information through July 2021. The total premium is \$3,601,181. Approximately 73% of the insured structures are located outside FEMA's designated Special Flood Hazard Areas (SFHAs). |
| Insurance       | How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage? | FEMA NFIP or Insurance Specialist<br>Community Information System Database              | 1,260 claims paid through July 2021; total amount: \$13,844,072. Information on how many of the paid claims were for substantial damage is not available.   |
| Insurance       | How many structures are exposed to flood risk within the community?   | Community Floodplain Administrator (FPA)<br>Estimate from FEMA                          | Approximately 2,000 structures are estimated to be in SFHAs.  |
| Insurance       | Describe any areas of flood risk with limited NFIP policy coverage  | Community FPA and FEMA Insurance Specialist   | An estimated 10% of the structures in SFHAs do not have NFIP coverage, presumably because their owners do not hold federally backed mortgages.  |
| Staff Resources | Is the Community FPA or NFIP Coordinator certified?   | Community FPA   | Community FPA/NFIP Coordinator holds Professional Engineer (PE) and Certified Floodplain Manager (CFM) certifications.  |
| Staff Resources | Is floodplain management an auxiliary function?   | Community FPA   | No. Floodplain management is a primary function of the two primary agencies responsible: the Department of Land Development Services (LDS) and the Department of Public Works and Environmental Services (DPWES).         |

<sup>16</sup> Fairfax County Department of Emergency Management and Security

| Category           | NFIP Topic  | Source of Information   | Comments  |
|--------------------|---|---|---|
| Staff Resources    | Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability) | Community FPA   | The full range of NFIP administrative services (permitting, inspections, outreach, GIS, and engineering analysis) is provided by LDS and DPWES. |
| Staff Resources    | What are the barriers to running an effective NFIP program in the community, if any?  | Community FPA   | Currently no barriers.  |
| Compliance History | Is the community in good standing with NFIP?  | State NFIP Coordinator, FEMA NFIP Specialist, community records | Yes   |
| Compliance History | Are there any outstanding compliance issues (i.e., current violations)?   |   | No  |
| Compliance History | When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?  |   | July 1st, 2020  |

## 5.2. Population

Fairfax County is more densely populated in the area closer to the District of Columbia, with dense population clusters throughout the County. Approximately 200 languages are spoken among its residents, highlighting the challenge of communicating emergency information and educating residents about hazard risks and vulnerabilities and the benefits of hazard mitigation. The Fairfax County Board of Supervisors and School Board created the County's One Fairfax Policy – a joint racial and social equity policy that commits the County and schools to intentionally consider equity when making policies or delivering programs and services.<sup>17</sup>

In Fairfax County, there are approximately 75,000 individuals that have identified a disability or access and functional need.<sup>18</sup> According to the U.S. Census Bureau 2013-2017 data, 4.3% of Fairfax County's residents under 65 identify as having a disability. This percentage would be much higher if disabled people 65 and older were counted in the data.<sup>19</sup>

1. <sup>17</sup> One Fairfax. (<https://www.fairfaxcounty.gov/topics/one-fairfax>)

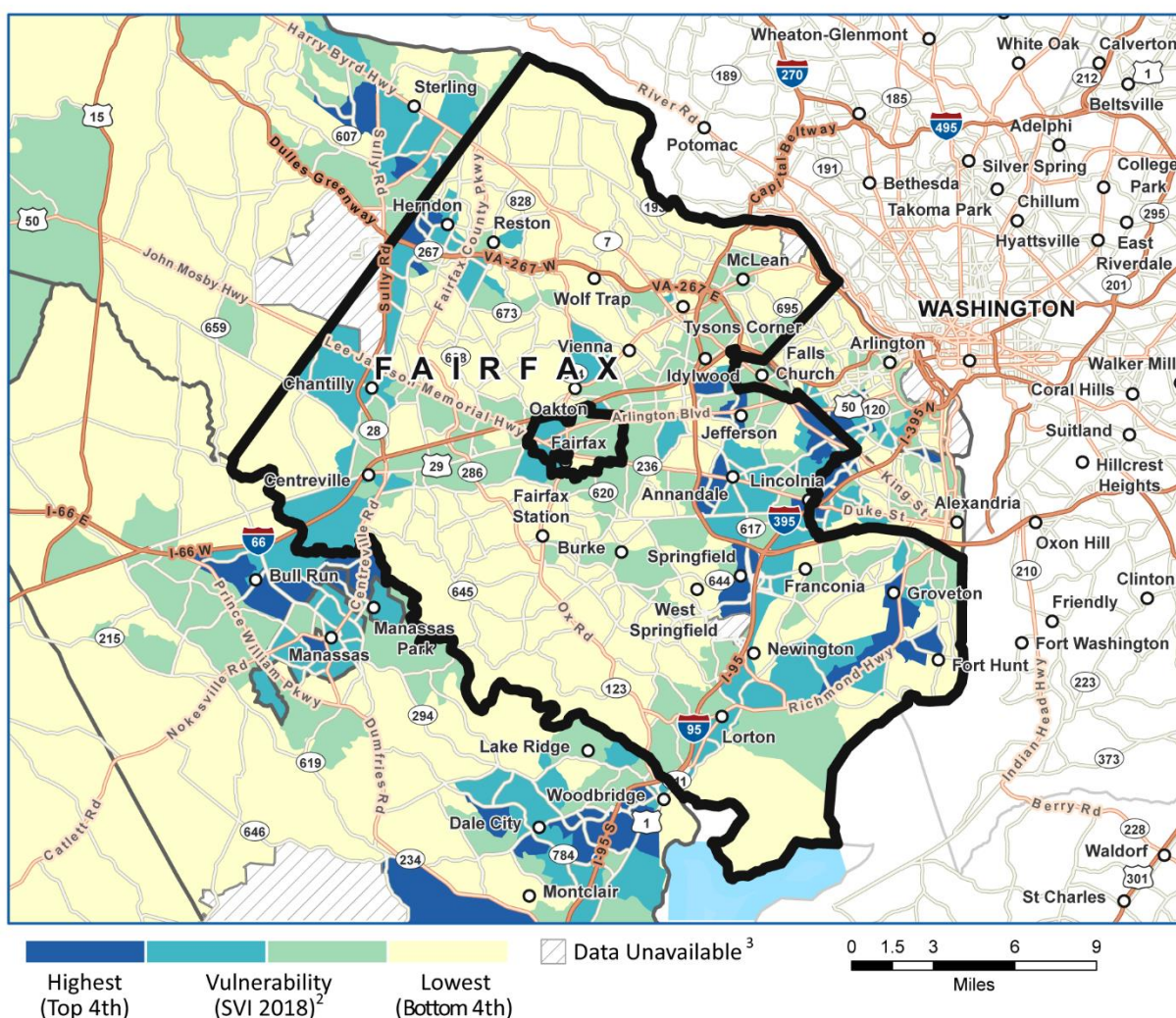
<sup>18</sup> Census Data from DSPD

<sup>19</sup> [U.S. Census Bureau QuickFacts: Fairfax County, Virginia](#)

Estimates of the number of residents in Fairfax County vulnerable to each hazard are presented in the various hazard sections in the **Base Plan**.

The Centers for Disease Control and Prevention's (CDC) **Social Vulnerability Index (SVI)** is a tool that can be used to identify specific vulnerable populations. The CDC SVI depicts the vulnerability of communities at the Census tract level, by county, into 15 Census-derived factors grouped into four themes—socioeconomic status, household composition/disability, race/ethnicity/language, and housing type/transportation. Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills.

Overall CDC SVI is illustrated in Figure 9, which indicates the locations of highest overall vulnerability are in more urbanized areas such as the Jefferson, Fairfax, Mt. Vernon, and Upper Potomac Planning Districts, as well as along major transportation routes.

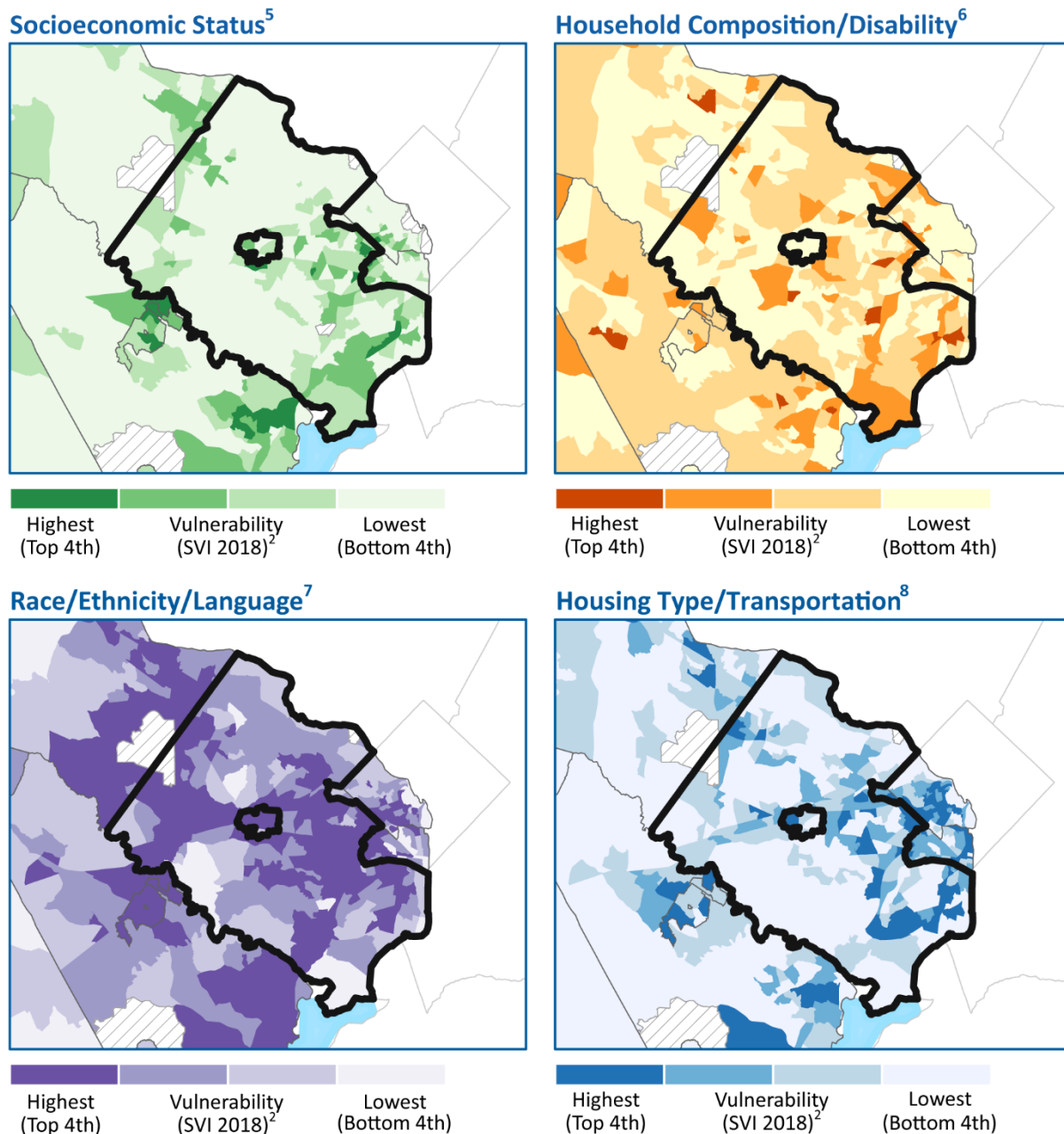


**Figure 9: Overall Social Vulnerability (2018), Fairfax County<sup>20</sup>**

When examined by vulnerability theme, the planning districts with highest vulnerabilities vary slightly:

<sup>20</sup> [Centers for Disease Control and Prevention \(https://svi.cdc.gov/map.html\)](https://svi.cdc.gov/map.html)

- **Socioeconomic Status:** Mt. Vernon, Lower Potomac, Baileys, Jefferson, and Annandale
- **Household Composition/Disability:** Mt. Vernon, Lower Potomac, Springfield, Pohick, and Bull Run
- **Race/Ethnicity/Language:** Jefferson, Baileys, Annandale, Bull Run, and Rose Hill
- **Housing Type/Transportation:** Mt. Vernon, Springfield, and Annandale



**Figure 10: Social Vulnerability, by Theme, Fairfax County<sup>21</sup>**

<sup>21</sup> Centers for Disease Control and Prevention (<https://svi.cdc.gov/map.html>)

The themed maps illustrate the County's higher level of vulnerability in the race/ethnicity/language theme, demonstrating the importance of communicating essential hazard mitigation, preparedness, response, and recovery information to the public in alternate formats and multiple languages.

### 5.3. Built Environment

Based on data currently available through Hazus, the tables presented in this section provide a total number of exposed facilities and properties in relation to earthquakes, floods, and hurricane winds.

**Table 22: Building Stock Exposure by General Occupancy<sup>22</sup>**

| Type         | Amount               |
|--------------|----------------------|
| Residential  | \$144,188,703        |
| Commercial   | \$20,116,524         |
| Industrial   | \$2,464,611          |
| Agricultural | \$272,032            |
| Religion     | \$1,827,947          |
| Government   | \$579,222            |
| Education    | \$1,378,119          |
| <b>TOTAL</b> | <b>\$170,827,158</b> |

Using the 100-year flood scenario, Hazus identified a total of 357 structures that would be damaged, with 44 being at least 50% damage, and 88 incurring substantial damage.

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<sup>22</sup> HAZUS

## 5.4. Community Lifelines and Assets

Fairfax County reviewed its community lifelines and assets to identify critical facilities, systems, and infrastructure that have the most significant risks and exposure. Vulnerabilities include structures, systems, resources, and other assets defined by the community as susceptible to damage and loss from hazard events.<sup>23</sup> The vulnerability of critical infrastructure is presented in the lifeline sector categories identified by FEMA.

**Table 23: Vulnerable Community Lifeline Assets (in Thousands of Dollars)<sup>24</sup>**

| Sector                      | Dollar Exposure (in thousands) |
|-----------------------------|--------------------------------|
| Safety and Security         | 0                              |
| Food, Water, and Sheltering | \$1,487,248                    |
| Health and Medical          | 0                              |
| Energy                      | \$837,534                      |
| Communications              | \$744                          |
| Transportation              | \$8,293,279                    |
| Hazardous Materials         | 0                              |

**Table 24: Critical Facilities Exposed to FEMA Identified Floodplains, Fairfax County<sup>25</sup>**

| Facility Type         | Total Facilities | In 100-Year Floodplain | In 500-Year Floodplain |
|-----------------------|------------------|------------------------|------------------------|
| Fire Stations         | 40               | 1                      | 0                      |
| Highway Bridges       | 670              | 235                    | 1                      |
| Highway Segments      | 205              | 61                     | 0                      |
| Light Rail Segments   | 13               | 8                      | 0                      |
| Natural Gas Pipelines | 14               | 13                     | 0                      |
| Ports                 | 5                | 1                      | 0                      |
| Railway Bridges       | 35               | 11                     | 0                      |

<sup>23</sup> Although Fairfax County maintains a separate critical facilities inventory, information used in this analysis is extracted from the HAZUS critical facilities database to maintain consistency with other jurisdictions.

<sup>24</sup> HAZUS 100- and 500-Year Flood Scenarios, August 3, 2021.

<sup>25</sup> Ibid.

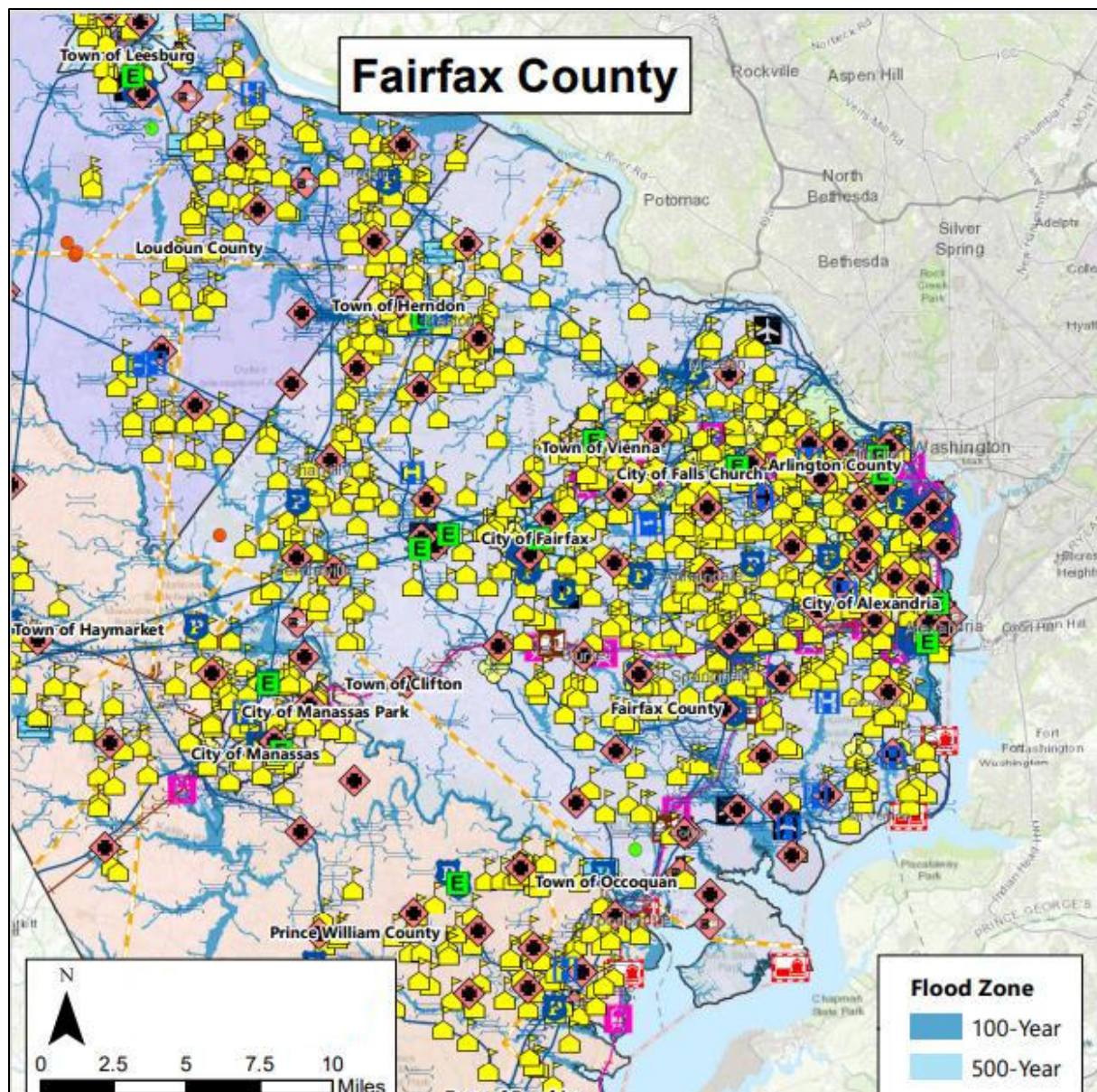


Figure 11: Community Lifelines/Critical Facilities within 100- and 500-Year Floodplains<sup>26</sup>

## 5.5. Environment

Information related to environmental vulnerability is presented in the hazard-specific sections of the [Base Plan](#).

Additional environmental concerns for Fairfax County are related to the Potomac Watershed Waterways and potential for flooding. The County also has a high number of public parks, outdoor sporting facilities, and National Park Service trails and parks. The County identified Huntley Meadows as a critical habitat due to its forests, meadows, and wetlands.

<sup>26</sup> HAZUS 100- and 500- Year Flood Scenarios, August 3, 2021.

## 5.6. Economy

Information related to economic vulnerability is presented in the hazard-specific sections of the **Base Plan**. Specific direct economic losses (in thousands of dollars) related to a 2,500-year 6.5 magnitude earthquake event are identified by Hazus for specific assets.

**Table 25: Direct Economic Losses (in Thousands of Dollars) Related to Earthquake, Flood, and Hurricane Wind<sup>27</sup>**

| Hazard         | Buildings (Capital Stock and Income) | Transportation | Utilities   |
|----------------|--------------------------------------|----------------|-------------|
| Earthquake     | \$1,929,731                          | \$27,003       | \$25,288    |
| Flood          | \$431,591                            | \$12.57        | \$70,758.83 |
| Hurricane Wind | \$123,575                            | 0              | 0           |

Additional economic concerns for Fairfax County are related to the area's economic base, which relies on government, information technology, and finance. Major employers include Fortune 500 companies, the federal government, and the military.

## 5.7. Cultural/Historical

Information related to vulnerability of cultural and historical assets is presented in the hazard-specific sections of the **Base Plan**.

Fairfax County has significant historical and cultural landmarks linked to the founding of the United States, such as these National Trust Historic Sites:

- Gunston Hall
- Mount Vernon
- Patowmack (Potomac) Canal
- Woodland Plantation/Pope-Leighey House

There are also locally designated landmarks.

Historic structures and sites are frequently more vulnerable to flood hazards due to the typical development of a city or town along a waterway. Because removing historic structures from their original site affects their historical value, there are challenges to protecting these fragile sites.

**Table 26: Cultural & Historic Properties Exposed to FEMA Identified Floodplains, Fairfax County<sup>28</sup>**

| Total Facilities | In 100-Year Floodplain | In 500-Year Floodplain |
|------------------|------------------------|------------------------|
| 63               | 18                     | 0                      |

<sup>27</sup> HAZUS (2,500-year, 6.5 magnitude earthquake scenario)

<sup>28</sup> Fairfax County

## 6. Capability Assessment

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Fairfax County reviewed its legislative and departmental capabilities to identify resources, strengths, and gaps for implementing hazard mitigation efforts. Using a Capabilities Assessment Worksheet, the community documented existing institutions, plans, policies, ordinances, programs, and resources that could be brought to bear on implementing the mitigation strategy. The capabilities in relation to hazard mitigation were assessed in the following categories:

- Planning and regulatory
  - Implementation of ordinances, policies, site plan reviews, local laws, state statutes, plans, and programs that relate to guiding and managing growth and development
- Administrative and technical
  - County, city, and town staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions
- Safe growth
  - Use of community planning through comprehensive plans as hazard mitigation to increase community resilience
- Financial
  - Resources that a jurisdiction has access to or is eligible to use to fund mitigation actions
- Education and outreach
  - Programs and methods that could be used to implement mitigation activities and communicate hazard related information

In addition to the Capabilities Assessment Worksheet, Fairfax County completed a Jurisdiction Needs Identification Questionnaire that summarized changes in and enhancements of capabilities since the last plan. This information is integrated into the summaries in this section.

### 6.1. Capability Assessment Summary Ranking and Gap Analysis

The jurisdiction ranked the levels of capability in relation to each assessment category as a means of identifying where elements could be strengthened or enhanced. Capabilities were ranked on a qualitative basis, as demonstrated by the jurisdiction's authorities, programs, plans, and/or resources:

- **Limited:** The jurisdiction is generally unable to implement most mitigation actions.
- **Low:** The jurisdiction has some capabilities and can implement a few mitigation actions.
- **Moderate:** The jurisdiction has some capabilities, but improvement is needed to implement some mitigation actions.
- **High:** The jurisdiction has significant capabilities, as demonstrated by its authorities, programs, plans, and/or resources, and it can implement most mitigation actions.

**Table 27: Capability Assessment Ranking Summary**

| Capability                   | Ranking  |
|------------------------------|----------|
| Planning and Regulatory      | High     |
| Administrative and Technical | High     |
| Safe Growth                  | High     |
| Financial                    | Moderate |
| Education and Outreach       | Moderate |

### *6.1.1. Planning and Regulatory Capabilities Summary<sup>29</sup>*

The County utilizes the all-hazards approach when developing any jurisdictional plans, including emergency operations, continuity of operations, and the hazard mitigation plan.

The following plans and goals have been developed or updated since the 2017 HMP:

- Fairfax County Community-Wide Energy and Climate Action Plan (CECAP)
- Fairfax County Five-Year Consolidated Plan for FY 2022–2026, with yearly Action Plan for FY 2022, (Affordable Housing and Community Development Needs)
- Resilient Fairfax, planning process Feb 2021 – Oct 2022; available Fall 2022
- Fairfax County Pre-Disaster Recovery Plan, dated April 2020
- Fairfax County Emergency Operations Plan, updated June 2019
- County of Fairfax, Virginia, Floodplain Management Plan (Part of the Northern Virginia Regional Hazard Mitigation Plan), Progress Report, dated September 2019
- Fairfax County Continuity of Operations Plan (COOP)

The “One Fairfax Policy,” adopted November 21, 2017, is a joint racial and social equity policy of the Fairfax County Board of Supervisors and Schools Board that commits to intentionally consider equity when making policies or delivering programs and services.

<sup>29</sup> Source: Fairfax County jurisdictional capabilities assessment.



Figure 12: One Fairfax Policy – “Equity Lens”<sup>30</sup>

### Capability Analysis: High

Significant planning and regulatory tools are in place in Fairfax County and bring to light successes in integrating hazard mitigation planning with existing planning mechanisms. This demonstrates that the jurisdiction recognizes the benefit of incorporating hazard mitigation into local planning and regulatory processes such as the Comprehensive Plan, the Capital Improvement Plan, and land development and floodplain regulations and understands how to use these processes to develop and implement mitigation actions.

#### 6.1.2. Administrative and Technical Capabilities Summary

- Planning and Development staff include planners, engineers, and a floodplain manager with an understanding of natural and non-natural hazards, all of whom participate in mitigation planning.
- The County maintains an Information Technology department with GIS personnel.
- County emergency management, health department, and other staff are familiar with the community's hazards.
- County administration has a grant writer who coordinates with the hazard mitigation program.
- The County uses Everbridge as an emergency warning system for internal and external notifications and warnings.

The County identified the following departments and agencies as key stakeholders in its hazard mitigation planning process and implementation of the plan:

- Code Compliance
- Office of Environmental and Energy Coordination
- Department of Emergency Management and Security
- Facilities Management Department
- Fire and Rescue Department

<sup>30</sup> [Fairfax County One Fairfax Policy](https://www.fairfaxcounty.gov/topics/sites/topics/files/Assets/images/one-fairfax-equity-lens-infographic.png). Retrieved from: <https://www.fairfaxcounty.gov/topics/sites/topics/files/Assets/images/one-fairfax-equity-lens-infographic.png>

- Health Department
- Land Development Services
- Park Authority
- Police Department
- Public Safety Communications
- Public Works and Environmental Services
- Sheriff's Office

### **Capability Analysis: High**

Fairfax County has a robust staffing capability that provides for a high level of coordination for the purpose of mitigation planning and action implementation. While enhancements in its administrative and technical capabilities were gained through the increase in department and agency positions that resulted from the COVID-19 pandemic, securing continuous funding for positions and ongoing education and training offer are areas for improvement.

#### ***6.1.3. Safe Growth Capabilities Summary***

- Growth guidance instruments, such as future land-use policies, regulations, and maps, identify natural hazard areas, e.g., floodplains, and discourage or prohibit development or redevelopment in these areas.
- The Comprehensive Plan includes a Transportation Element that addresses appropriate placement and utilization of transportation systems.
- Environmental policies encourage appropriate development to protect ecosystems.
- Public Safety plans and procedures address emergency evacuation and other safety measures associated with safe growth.
- The Capital Improvement Program integrates hazard mitigation projects identified in the hazard mitigation plan.
- The building code and floodplain regulations provide for a Base Flood Elevation (BFE) sufficient to protect property from the 100-year flood event.

### **Capability Analysis: High**

Fairfax County has well-established safe growth regulatory and enforcement capabilities to limit or prevent inappropriate development in identified hazard areas and protect the natural environment. No additional enhancements are identified at this time.

#### ***6.1.4. Financial Capabilities Summary***

- The County's Capital Improvements Plan provides funding for projects outside of the County's annual operational budget.
- The County has the authority to incur debt through general obligation bonds and/or special tax bonds, as well as fees for utility services and impact fees for new development.
- The County participates in multiple federal and state funding programs such as Hazard Mitigation Assistance (HMA); health department; transportation, fire, and police funding programs such as

Hazard Mitigation Grant Program (HMGP); Emergency Management Performance Grant (EMPG); Staffing for Adequate Fire and Emergency Response Grants (SAFER); Community Oriented Policing Services (COPS); and others through various disciplines.

### **Capability Analysis: Moderate**

Although rising operational costs and limited financial resources are an everyday challenge for most local governments, Fairfax County has significant experience and success in leveraging and combining local, state, and/or federal funding sources to implement mitigation-related projects. The process for identifying potential grants, developing and submitting applications, and managing grant-funded projects is time-consuming and challenging, especially when multiple disasters occur simultaneously. In addition, onsite work restrictions imposed during the COVID-19 pandemic from March 2020 that are set to continue throughout 2022 continue to present challenges in staff availability and coordination. To address these shortfalls, the jurisdiction may access technical assistance available to potential applicants provided by many grant programs or expand its capabilities to develop and manage mitigation actions through contracted services.

#### ***6.1.5. Education and Outreach Capabilities Summary***

- Community Rating System initiatives within the NFIP program can increase public awareness of and involvement in hazard mitigation.

Fairfax County has identified programs or organizations that can help integrate hazard mitigation into community programs to increase public involvement:

- Fire Department – Fire Safety
- Office of Energy and Environment
- Police Department – Personal Safety
- Fairfax County Economic Development Authority (EDA)
- Department of Public Works and Environmental Services, Stormwater Management – Flood Awareness and Mitigation Chambers of Commerce
- American Red Cross
- Volunteer Fairfax
- Partnerships with energy and water companies

### **Capability Analysis: Moderate**

Jurisdictions have multiple opportunities to promote hazard mitigation and increase involvement of stakeholders and the public. There is a critical need to inform additional stakeholders and the public about the benefits of hazard mitigation planning and implementation. Virginia Department of Emergency Management (VDEM) mitigation staff can provide technical assistance to support increased jurisdictional involvement. Many hazard mitigation educational tools and materials are available from state agencies and disaster preparedness and response organizations, such as the American Red Cross, FEMA, and faith-based organizations with disaster response missions.

## 6.2. Capability Summary – Activities that Reduce Natural Hazard Risk or Impacts

As a component of the capability assessment, Fairfax County identified activities related to each natural hazard that support risk reduction.

**Table 28: Capability Summary - Activities that Reduce Natural Hazard Risk or Impacts**

| Hazard                         | Activity   |
|--------------------------------|--|
| Dam Failure (including Levees) | <ul style="list-style-type: none"> <li>Huntington Levee was completed in 2019.</li> <li>All high hazard dams in Fairfax County have Emergency Action Plans (EAP) for potential incidents.</li> </ul>   |
| Drought                        | <ul style="list-style-type: none"> <li>Public education and operational plans address preparedness and response to reduce risk.</li> <li>Land use and environmental policies acknowledge the importance of protecting the natural environment.</li> </ul>  |
| Earthquake                     | <ul style="list-style-type: none"> <li>State and international building codes provide for seismic design regulations.</li> <li>Public education and operational plans address preparedness and response to reduce risk.</li> </ul>   |
| Extreme Temperature            | <ul style="list-style-type: none"> <li>Public education and operational plans address preparedness and response to reduce risk.</li> </ul>   |
| Flood/Flash Flood              | <ul style="list-style-type: none"> <li>Floodplain administration and regulations ensure that inappropriate activities and future development in the floodplain are prohibited.</li> <li>Stormwater management program and projects address flood prevention and risk reduction.</li> <li>Huntington Levee, completed in 2019, protects at least 160 homes in the community from floods due to tidal surges from the Potomac River and flash flooding from the Cameron Run Watershed. The project was recognized for its sustainable infrastructure by the Institute for Sustainable Infrastructure.</li> </ul> |
| High Wind/Severe Storm         | <ul style="list-style-type: none"> <li>State and International building codes provide for wind regulations.</li> </ul>   |
| Karst/Sinkhole/Land Subsidence | <ul style="list-style-type: none"> <li>Land use and environmental policies acknowledge the importance of protecting the natural environment.</li> </ul>  |
| Landslide                      | <ul style="list-style-type: none"> <li>Land use and environmental policies acknowledge the importance of protecting the natural environment.</li> </ul>  |
| Tornado                        | <ul style="list-style-type: none"> <li>Public education and operational plans address preparedness and response to reduce risk.</li> </ul>   |
| Wildfire                       | <ul style="list-style-type: none"> <li>Public education and operational plans address preparedness and response to reduce risk.</li> </ul>   |
| Winter Storm                   | <ul style="list-style-type: none"> <li>Public education and operational plans address preparedness and response to reduce risk.</li> </ul>   |
| Non-Natural Hazards            | <ul style="list-style-type: none"> <li>Public education and operational plans address preparedness and response to reduce risk.</li> <li>Beginning with the 2022 NOVA HMP, hazard mitigation planning is being integrated into existing planning and risk reduction activities for technological and human-caused hazards.</li> </ul>  |

| Hazard         | Activity   |
|----------------|--|
| Climate Change | <ul style="list-style-type: none"><li>• The “Resilient Fairfax” climate adaptation and resilience plan will be completed in 2022; it includes projected climate hazards, a climate vulnerability and risk assessment, and an audit of existing policies, plans, and programs, and strategies to enhance the County’s resilience to climate hazards. The climate hazards analyzed include heavy precipitation, severe storms and wind, extreme heat, drought, extreme cold, and coastal flooding.</li></ul> |

## 7. Resilience to Hazards

### 7.1. National Risk Index

The National Risk Index (NRI) provides an overview of hazard risk, vulnerability, and resilience. The designation of “low risk” is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience.

The National Risk Index (NRI) is a dataset and online tool developed by the Federal Emergency Management Agency (FEMA) and other partners to help illustrate communities in the United States at risk for 18 natural hazards. Hazard risk is calculated on data for a single hazard type and reflects the relative risk for that hazard type and should thus be considered only as a baseline relative risk measurement for the purpose of a general comparison with the local hazard risk ranking in the Hazard Risk Ranking section of this annex. In addition, some hazards are defined differently from the hazards in this plan, so a direct hazard-to-hazard comparison of risk cannot be determined.

Based on the NRI findings, the top five hazards by risk rating for Fairfax County are Winter Weather, Strong Wind, Tornado, Cold Wave (known within this plan as Extreme Cold), and Heat Wave (known within this plan as Extreme Heat). Lightning, Ice Storm, Hail, and Riverine Flooding received lower risk ratings; however, 14 of the 15 hazards rated for risk were all determined to be “very low,” with one hazard, Heat Wave, determined as “relatively low.”

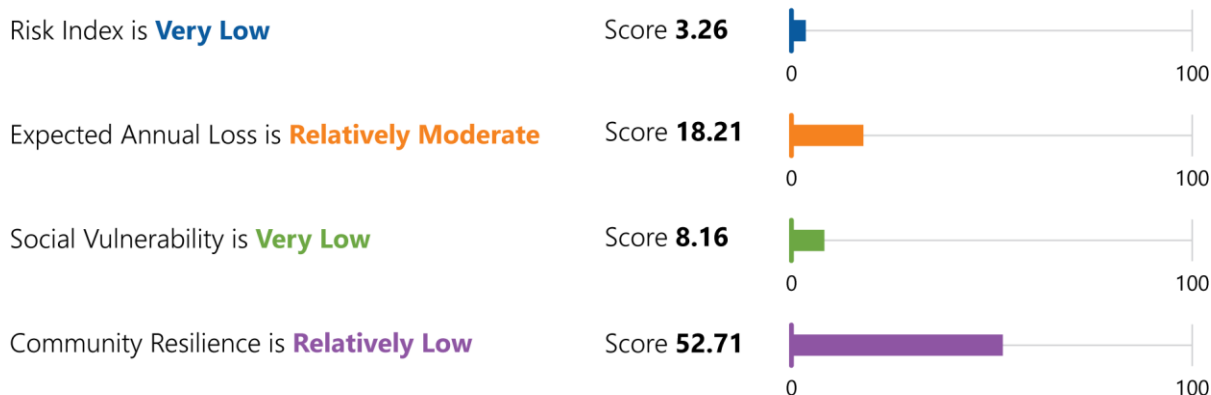


Figure 13: Summary of National Risk Index Findings, Fairfax County<sup>31</sup>

Table 29: Comparison of Fairfax County Scores with Virginia and National Average<sup>32</sup>

| Index                | Fairfax County | Virginia Average | National Average |
|----------------------|----------------|------------------|------------------|
| Risk                 | 3.26           | 6.62             | 10.70            |
| Expected Annual Loss | 18.21          | 9.35             | 13.47            |
| Social Vulnerability | 8.16           | 35.32            | 38.35            |
| Community Resilience | 52.71          | 54.92            | 54.59            |

<sup>31</sup> National Risk Index

<sup>32</sup> Ibid.

**Table 30: Fairfax County Risk Ranking Summary<sup>33</sup>**

| Index                | Rank                |
|----------------------|---------------------|
| Risk                 | Very Low            |
| Expected Annual Loss | Relatively Moderate |
| Social Vulnerability | Very Low            |
| Community Resilience | Relatively Low      |

Fairfax County's NRI Community Resilience score of 52.71 represents a relatively low ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the United States.

The NRI calculation does not follow the same criteria and formulas used in the hazard risk ranking methodology for this plan but is provided as a comparative measurement tool.

## 7.2. Community Resilience Estimate

The Community Resilience Estimate (CRE) is a data product produced by the U.S. Census Bureau that can be utilized to estimate potential community resilience to disasters by combining data from several sources to analyze individual and household level risk factors.

The index produces aggregate-level (Census tract, county, and state) small area estimates that help determine how at risk specific neighborhoods might be to disasters due to characteristics that may make specific segments of the population more vulnerable to the impacts and consequences of disasters. The 10 risk factors<sup>34</sup> include the following:

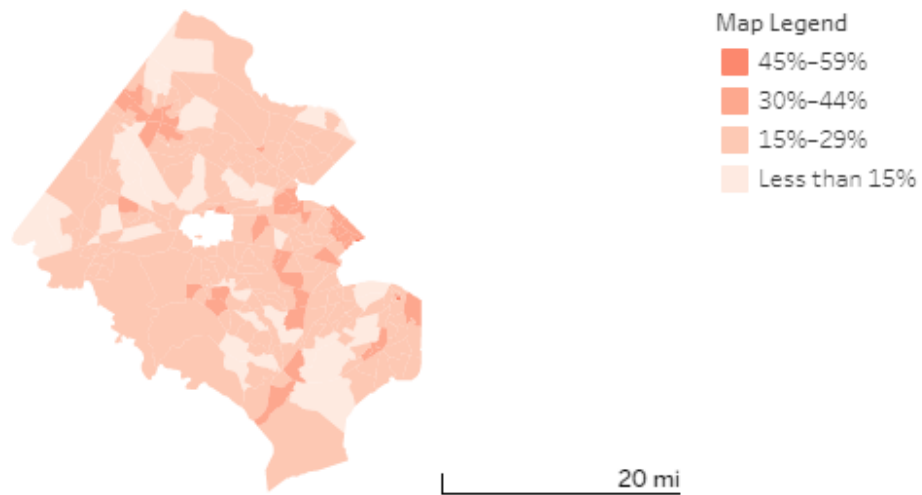
1. Income-to-poverty ratio
2. Single or zero caregiver household
3. Unit-level crowding
4. Communication barrier
5. Aged 65 years or older
6. Lack of full-time or year-round employment (household)
7. Disability
8. No health insurance coverage
9. No vehicle access (household)
10. No broadband internet access (household)

<sup>33</sup> Ibid.

<sup>34</sup> The Community Resilience Estimates are developed by the U.S. Census Bureau; initial release date, August 10, 2021. Methodology is described at the [U.S. Census Bureau Community Resilience Methodology page](https://www.census.gov/programs-surveys/community-resilience-estimates/technical-documentation/methodology.html) (<https://www.census.gov/programs-surveys/community-resilience-estimates/technical-documentation/methodology.html>).

## Fairfax County, VA

Map of Percentage of Residents in Tract with 3+ Risk Factors



**Figure 14: Community Resilience Estimate<sup>35</sup>**

The estimate is categorized into three groups: zero risks, one or two risks, and three or more risks. The CRE for Fairfax County is 14.72 percent, meaning that 167,857 of county residents have three or more risk factors.

The combination of data and analysis described in this section provides a comprehensive representation of Fairfax County's risk, vulnerability, and resilience to all hazards.

### 7.3. New Hazard Risk Challenges or Obstacles to Be Monitored in the Next Planning Cycle

The Fairfax County Planning Committee identified specific hazard challenges and obstacles to be monitored in the next planning cycle:

- The risk of cyber-related incidents on critical infrastructure and key resource sites
- Climate change causing increased precipitation intensity and quantities, increased extreme heat, increased storm severity, and increased coastal (Potomac River) flooding
- Increases in the number of excessive rainfall events that impact new areas with floods

<sup>35</sup> Community Resilience Estimates, U.S. Census Bureau

## 8. Mitigation Actions

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### 8.1. Goals and Objectives

The Fairfax County Planning Team adopted the regional goal statement presented in [Section 8, Base Plan](#). In addition, the *Fairfax County Emergency Operations Plan (EOP)*, dated June 2019, defines the primary goal of mitigation as reducing “loss of life and property by lessening the impact of disasters,” which is achieved through “regulations, local ordinances, land use and building practices, and mitigation projects that reduce or eliminate long-term risk from hazards and their effects.” (*Fairfax County EOP*, p. 81). The link between the goals of the *NOVA HMP* and the *EOP* increases the likelihood of success in implementing mitigation actions.

### 8.2. Status of Previous Actions

Fairfax County monitors actions and tracks progress through the periodic review, evaluation, revision, and update of the *NOVA HMP*. Some projects that contribute to risk reduction have been completed or are currently in progress but have not been included in this plan due to one of the following reasons:

- Project funding has been approved, received, or identified, and additional resources are not needed to complete the project.
- The project scope is inconsistent with the hazard mitigation planning goals defined in this plan.
- The responsible department, agency, or organization maintains an internal tracking system that documents progress and resulting risk reduction.

The Fairfax County Mitigation Actions list includes previously identified actions from the 2006, 2010 and 2017 plans. Four actions from the 2006 plan were carried forward for the 2022 *NOVA HMP* update. Twelve actions from the 2010 plan were carried forward, and one was noted as completed and removed from the list. Nine actions from the 2017 plan were carried forward and three were noted as complete.

A comprehensive list of previous mitigation actions, including descriptions of progress made and current status, is presented in [Attachment 3](#) of this annex.

### 8.3. New Mitigation Actions

In addition to the actions carried forward from previous plans, the Fairfax County Planning Team identified two new mitigation actions to include in this plan to address expansion and strengthening of the Department of Emergency Management and Security’s continuity program by increasing the resilience of county operations and coordinate with FEMA to re-evaluate flood zones and update Flood Insurance Rate Maps (FIRMs) as a basis for future National Flood Insurance Program Activities. [Attachment 3](#) of this annex includes a table that summarizes each new and continued action with descriptions of the proposed activity, priority level, estimated cost, and lead agency.

### 8.4. Action Plan for Implementation and Integration

The Fairfax County Department of Emergency Management and Security (DEMS) is responsible for coordinating county departments and agencies participating in hazard mitigation activities. The DEMS-designated Mitigation Coordinator is responsible for implementing the mitigation plan on two levels: implementation of the jurisdiction’s actions and facilitating implementation of the multi-jurisdictional regional plan. Tasks to ensure that the jurisdiction’s actions are implemented are integrated into the *Action Plan for Implementation and Integration* (which includes the prioritized list of Mitigation Actions), and plan maintenance procedures described in the next section.

The *Fairfax County Emergency Operations Plan (EOP)*, dated June 2019, (p. 82) defines criteria for project eligibility under the Hazard Mitigation Grant Program (HMGP), stating that a project must meet the following requirements:

- Conform to the State Hazard Mitigation Plan.
- Conform to environmental, historical, and economic justice issues.
- Provide a long-term solution.
- Demonstrate cost effectiveness.
- Comply with program regulations.
- Be consistent with overall mitigation strategies.

The Action Plan for Implementation and Integration describes how the County's hazard mitigation risk assessment and goals will be incorporated into its existing plans and procedures.

**Table 31: Action Plan for Implementation and Integration of Mitigation into Existing Plans and Procedures, Fairfax County**

| Existing Plan or Procedure  | Description of How Mitigation Will Be Incorporated or Integrated   |
|---|--|
| Integrate goals into local comprehensive plan.  | Continue to coordinate with the Department of Planning and Development and other applicable departments to incorporate current and emerging risks and actions into planning efforts. |
| Review/update land development regulations for consistency with mitigation goals.           | Continue coordination with the Department of Planning and Development and Land Development Services regarding future land use projects.  |
| Review/update building/zoning codes for consistency with mitigation goals.                  | Work with the Department of Planning and Development and Land Development Services regarding county zoning ordinances and consistency with mitigation goals.                         |
| Maintain regulatory requirements of floodplain management program (NFIP).                   | Support the Department of Public Works and Environmental Services Stormwater Division, which is responsible for floodplain management.   |
| Enhance floodplain management through the Community Rating System (CRS).                    | Work with Land Development Services and the Department of Public Works and Environmental Services on reviews of floodplain management and mapping.                                   |
| Review/Update economic development plan and policies for consistency with mitigation goals. | Work with Fairfax County Department of Economic Initiatives and Economic Development Authority to ensure consistency in plans.   |
| Continue public engagement in mitigation planning.  | Continue to promote awareness of hazards and incorporate public feedback into planning processes for resident feedback.  |
| Identify opportunities for mitigation education and outreach.                               | Identify opportunities to conduct community outreach to promote the importance of mitigation projects.   |
| Review/update stormwater plans and procedures for consistency with mitigation goals.        | Work with the Department of Public Works and Environmental Services Stormwater Division to discuss plans and procedures on a more frequent basis.                                    |

| Existing Plan or Procedure   | Description of How Mitigation Will Be Incorporated or Integrated  |
|--|---|
| Review/update emergency plans to address evacuation and sheltering.              | Continue to work with partner agencies on the Shelter Annex.  |
| Maintain ongoing enforcement of existing policies.                               | Support the Department of Planning and Development and Land Development Services with any applicable enforcement policies.  |
| Monitor funding opportunities.   | DEMS will continue to monitor funding sources and coordinate with departments on projects that support mitigation actions.  |
| Incorporate goals and objectives into day-to-day government functions.           | DEMS will incorporate the concept of mitigation into day-to-day government functions, including continual monitoring of the action items identified in the 2022 update. |
| Incorporate goals into day-to-day development policies, reviews, and priorities. | Continue work with the Department of Planning and Development and Land Development Services to incorporate mitigation into day-to-day activities.                       |

## 9. Annex Maintenance Procedures

### 9.1. Maintenance of the NOVA HMP, Base Plan

The point of contact for the Northern Virginia Mitigation Project Team is the facilitator for the process to monitor, evaluate, and update the **NOVA HMP, Base Plan**. This facilitator is responsible for initiating the annual activities, convening the NOVA Planning Team (made up of the Emergency Managers Group and Planning Group), and providing follow-up reports to designated entities defined in the method and schedule for the plan maintenance process, as outlined in **Section 3, Base Plan**.

**Table 32: Fairfax County Plan Maintenance Responsibilities for the Northern Virginia Hazard Mitigation Plan (Base Plan)**

| Activity            | Responsibilities   |
|---------------------|--|
| Monitoring the Plan | <ul style="list-style-type: none"> <li>• Represent the jurisdiction during the monitoring process.</li> <li>• Collect, analyze, and report data to the NOVA Planning Team.</li> <li>• Maintain records and documentation of all jurisdictional monitoring activities.</li> <li>• Assist in disseminating reports to stakeholders and the public.</li> <li>• Promote the mitigation planning process with the public and solicit public input.</li> </ul> |
| Evaluating the Plan | <ul style="list-style-type: none"> <li>• Represent the jurisdiction during the evaluation process.</li> <li>• Collect and report data to the NOVA Planning Team.</li> <li>• Maintain records and documentation of all jurisdictional evaluation activities.</li> <li>• Assist in disseminating information and reports to stakeholders and the public.</li> </ul>  |
| Updating the Plan   | <ul style="list-style-type: none"> <li>• Represent the jurisdiction during the planning cycle, including plan review, revision, and update processes.</li> <li>• Collect and report data to the NOVA Planning Team.</li> <li>• Maintain records and documentation of all jurisdictional plan review and revision activities.</li> <li>• Help disseminate reports to stakeholders and the public.</li> </ul>  |

### 9.2. Maintenance of the Jurisdiction Annex

In addition to maintenance of the **NOVA HMP Base Plan**, the Fairfax County Mitigation Planning Coordinator will facilitate the method and schedule for maintaining the **Jurisdiction Annex**.

#### 9.2.1. Plan Maintenance Schedule

- **Monitor:** Annually and/or following major disaster(s)
- **Evaluate:** Annually and/or following major disaster(s)
- **Update:** Annual tasks over the five-year planning cycle; planning process in the fifth year

**Table 33: Fairfax County Jurisdiction Annex Maintenance Procedures**

| Activity             | Procedure and Schedule  | Outcome   |
|----------------------|---|---|
| Monitoring the Annex | <ol style="list-style-type: none"> <li>1. Schedule the annual plan review with jurisdiction planning team.</li> <li>2. Review the status of all mitigation actions, using the <i>Mitigation Action Implementation Worksheet</i> (<b>NOVA HMP Base Plan, Section 3, Attachment A</b>).</li> </ol>  | <ul style="list-style-type: none"> <li>• Produce an annual report that includes the following:</li> <li>• Status update of all mitigation actions</li> <li>• Summary of any changes in hazard risk or vulnerabilities and capabilities</li> <li>• Summary of activities conducted for the Action Plan for Implementation and Integration</li> </ul> |
| Evaluating the Annex | <ol style="list-style-type: none"> <li>1. Schedule the annual plan evaluation with jurisdiction planning team.</li> <li>2. Evaluate the current hazard risks and vulnerabilities, and hazard mitigation capabilities using the <i>Planning Considerations Worksheet</i> (<b>NOVA HMP Base Plan, Section 3, Attachment C</b>).</li> </ol>  | <ul style="list-style-type: none"> <li>• Submit the annual report to the NOVA HMP Project Team Point of Contact</li> </ul>  |
| Updating the Annex   | <ol style="list-style-type: none"> <li>1. Coordinate with Northern Virginia jurisdictions to identify the method and schedule for the five-year update of the NOVA HMP.</li> <li>2. Participate in the planning process.</li> <li>3. Provide input related to the plan components.</li> <li>4. Following FEMA Approvable Pending Adoption (APA) designation, adopt the updated plan.</li> </ol> | <ul style="list-style-type: none"> <li>• Adoption of the FEMA-approved plan every five years will maintain the jurisdiction's eligibility for federal post-disaster funding.</li> </ul>   |

Mitigation actions presented in the Fairfax County Jurisdiction Annex may be reviewed, revised, and updated at any time. In addition, the *Fairfax County EOP*, p. 83, stipulates that “DEMS (Department of Emergency Management and Security) will contact all agencies for post-disaster mitigation activities and notify them of their role in these operations.” This will ensure that mitigation actions remain current and positioned for potential funding should it become available.

Fairfax County will continue to partner with multiple jurisdictions and regional entities to plan and identify hazard mitigation opportunities that reduce risk to the hazards identified in this plan.

## 10. Annex Adoption

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The Fairfax County Jurisdiction Annex will be adopted simultaneously with the adoption of the *Northern Virginia Hazard Mitigation Plan*.

## 11. Attachments

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- Attachment 1: Adoption Resolution
- Attachment 2: Documentation of Public Participation
- Attachment 3: Mitigation Actions

## 11.1. Attachment 1: Adoption Resolution

[This page is a placeholder for the Adoption Resolution for this jurisdiction.]

## 11.2. Attachment 2: Documentation of Public Participation

### Public Hazard Survey – Screenshots of the Survey Promotion

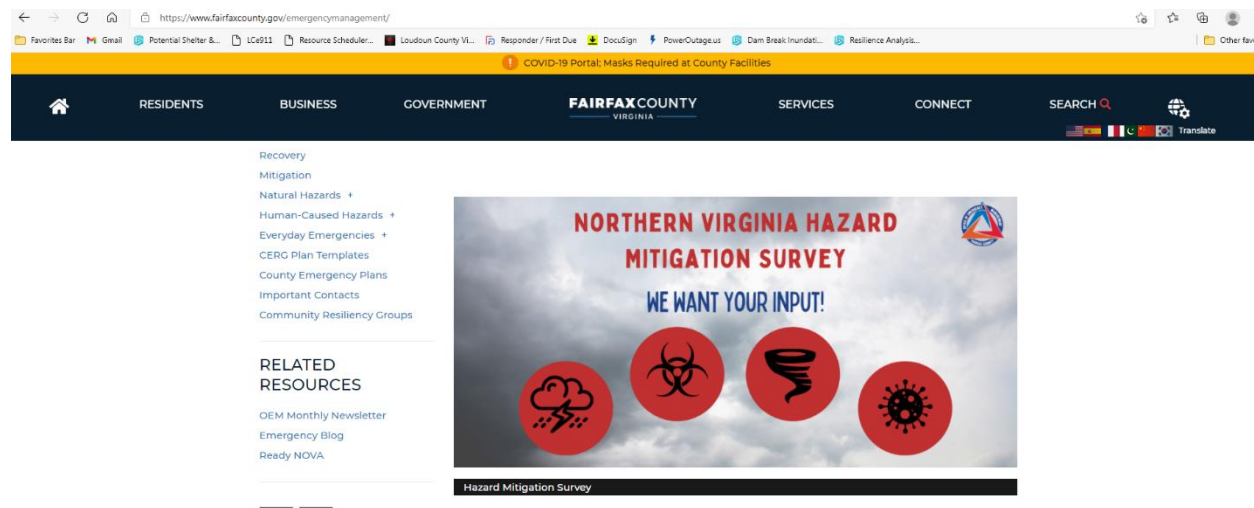


Figure 15: Fairfax County DEMS Webpage

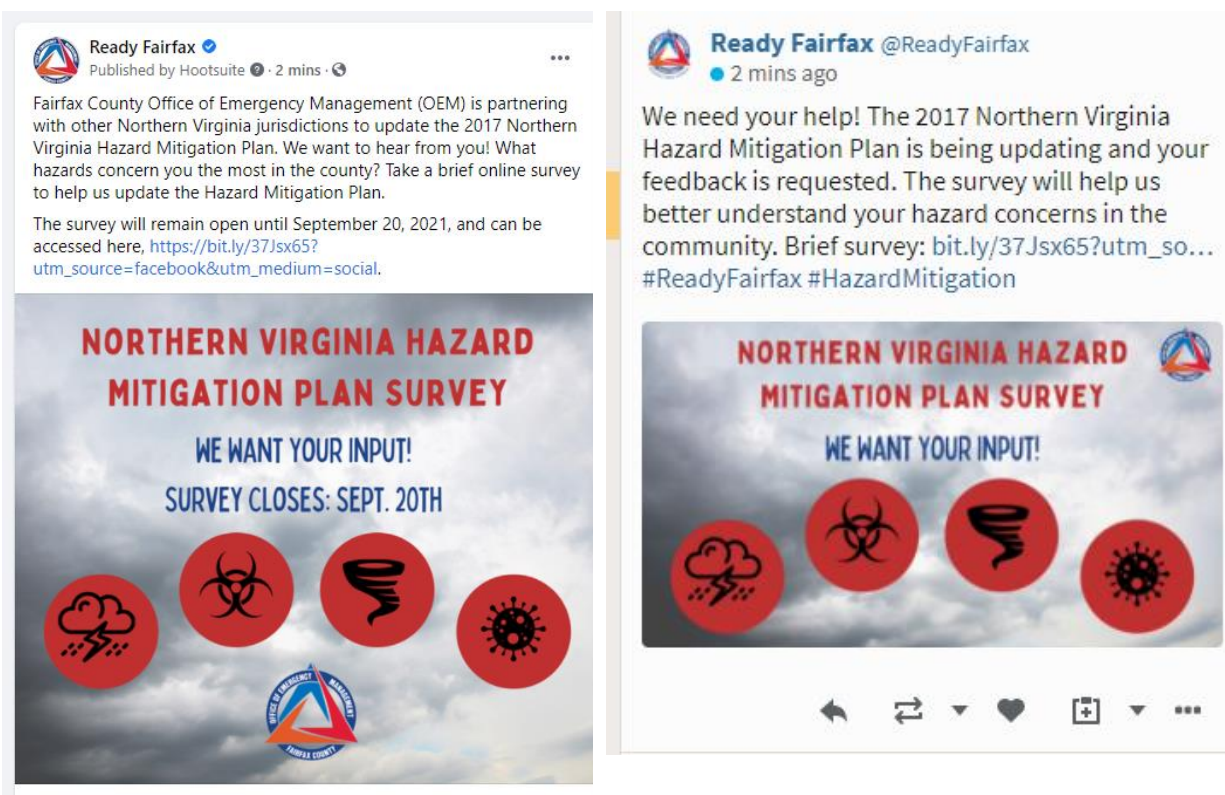


Figure 16: Social Media – Twitter and Facebook

## Fairfax County Emergency Information

Official Fairfax County Government Emergency Preparedness, Response and Recovery Website


[Blog](#)
[Weather Forecast](#)
[Transportation](#)
[Hazards](#)
[Prepare](#)
[Public Meetings](#)
[Radio](#)

August 17, 2021

by Fairfax County  
Emergency  
Information

in Prepare

### Take Survey to Help Update the Regional Hazard Mitigation Plan



Is your home or office building prone to damage from flooding, earthquakes or tornadoes? Do you want to recover more quickly from disasters and prevent future damage from these and other hazards?

Our Office of Emergency Management is partnering with other Northern Virginia jurisdictions to update the Northern Virginia Hazard Mitigation Plan.

You might be asking yourself, what is hazard mitigation?

Hazard mitigation is the sustained actions taken to reduce or eliminate long-term risk to people and property from hazards. This plan identifies those natural and non-natural hazards throughout the region. It also presents an assessment of critical facilities vulnerable to these hazards. The updated plan will list potential actions needed to reduce risk and future damage.

Although the plan enables the county to be eligible for various assistance grants, the plan's value really lies in the identification of hazards and helps Fairfax County, and its residents, better prepare for disasters.

Your participation can make our community more resilient to a disaster. Please take this survey, which will remain open until Sept. 20:

<https://www.surveymonkey.com/r/NorthernVirginiaHazardMitigationSurvey>.

#### TRANSLATE THIS

Select Language

Powered by [Google Translate](#)

#### CORONAVIRUS (COVID-19) RESOURCES

- Fairfax County Coronavirus Page
- Fairfax County Health Dept.
- Virginia Department of Health
- CDC

Sign up for text message alerts: text FFXCOVID to 888777 (English); text FFXCOVIDESP to 888777 for updates in Spanish, or [signup online](#)

If you have questions about COVID-19 vaccines, call 703-324-7404. Call our Health Department Call Center at 703-287-3611 with Coronavirus questions. Both call centers are open 9 a.m. to 7 p.m. Monday thru Friday. You also can email [ffxcovid@fairfaxcounty.gov](mailto:ffxcovid@fairfaxcounty.gov). Inbox is monitored M-F, 8 a.m. to 4:30 p.m.

#### SUBSCRIBE TO BLOG

Enter your email address to subscribe to this blog and receive notifications of new posts by email.

Join 8,190 other subscribers

Email Address

Subscribe

#### Fairfax County Government Radio

Click on the play button to listen

▶ 0:00

#### TWITTER UPDATES

Tweets by @FairfaxCounty

Figure 17: Fairfax County Emergency Blog



Figure 18: Fairfax County Government Twitter

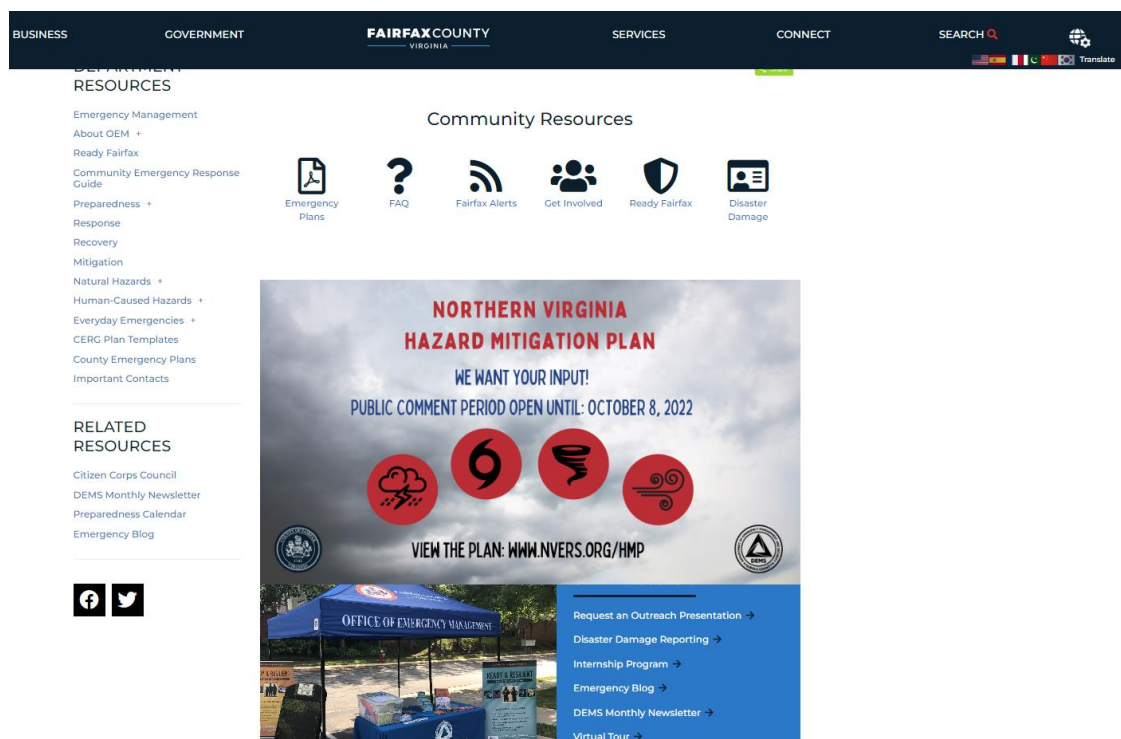


Figure 19: Final Draft Public Comment Website



Figure 20: Final Draft Public Comment Facebook



Figure 21: Final Draft Public Comment Twitter

## 11.3. Attachment 3: Mitigation Actions

**Table 34: Previous Mitigation Actions**

| Project No. | Agency/Department Mitigation Action   | Lead Agency/ Department/ Organization | Hazard  | Funding Source   | Target Completion Date | Interim Measure of Success   | Priority | Comment   | Current Status         | Projected Completion                             |
|-------------|---|---------------------------------------|---|--|------------------------|--|----------|---|------------------------|--|
| 2006-2      | Continue to develop and implement flood proofing solutions for structures by analyzing flood causes and responsibilities. Continue to develop and implement flood proofing solutions for structures using the County's mapping of the regulatory floodplain based on the ultimate development condition flows, neighborhood drainage improvement projects, and projected climate change conditions. | DPWES: Stormwater                     | <ul style="list-style-type: none"> <li>Dam Failure</li> <li>Flood</li> <li>High Wind/ Severe Storm</li> <li>Winter storm</li> </ul> | County Funding   | Ongoing                | Initiate service request within 48 hours of receiving the request.   | High     | These projects are completed when the County attorney. We are responsible and the efforts are ongoing. The language for this action has been modified slightly for the 2017 plan, but the intent remains unchanged. | In Progress/ Retaining | To be completed in the 2022–2027 planning cycle. |
| 2006-5      | Continue to install remote lake level sensors, data collectors/alarms, stream flow gauges, tide gauges and rain gauges at critical locations throughout the County to allow for earlier warning of potential flooding.  | DPWES: Stormwater                     | <ul style="list-style-type: none"> <li>Dam Failure</li> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul>                       | FEMA Hazard Mitigation Assistance Grants, US Army Corps of Engineers, County Funding, and VDEM | Ongoing                | Prioritize installation of gauges within one year of substantial completion and as resources allow Interim measure still the same. | High     | These projects are ongoing and competed as funding becomes available. Need VDEM to approve placement of the gauges.   | In Progress/ Retaining | To be completed in the 2022–2027 planning cycle. |
| 2006-13     | Identify need for backup generators, communications,  | Park Authority                        | <ul style="list-style-type: none"> <li>All Hazards</li> </ul>   | UASI funding,  | July 2014              | Conduct generator  | Medium   | This program will be  | In Progress/ Retaining | To be completed                                  |

|         |  |                           |   |  |         |   |        |   |  |  |
|---------|--|---------------------------|---|--|---------|---|--------|---|--|--|
|         | and/or vehicles at critical public facilities. Develop means to address identified shortfalls.                   |                           |   | County funding, and VDEM grant   |         | survey to identify which facilities require a backup generator by January 2012. Successful grant application package. |        | completed when funding becomes available.   |  | in the 2022-2027 planning cycle.                 |
| 2006-28 | Continue to implement building and development standards as required under the National Flood Insurance Program. | Land Development Services | <ul style="list-style-type: none"> <li>All Hazards</li> </ul> | FEMA Hazard Mitigation Assistance Grants, US Army Corps of Engineers, County Funding, VDEM | Ongoing | Implement one new standard (at least at County facilities) every year.  | Medium | This task is ongoing; as updates are made to building and development standards, they are reviewed and incorporated as appropriate. All new policies and procedures are in accordance with the National Flood Insurance Program (NFIP). Currently, Land Development Services sends out reminder notices in advance of know whether events. LDS also does a standard site inspection | Forever ongoing due to standards continually changing. | To be completed in the 2022-2027 planning cycle. |

|        |  |                                |   |  |         |   |      |   |                                   |                                       |
|--------|--|--------------------------------|---|--|---------|---|------|---|-----------------------------------|---------------------------------------|
|        |  |                                |   |  |         |   |      | during construction and after each significant weather event to ensure erosion and other controls worked and/or whether additional efforts and clean-up are required.   |                                   |                                       |
| 2010-6 | Continue to employ a broad range of warning systems throughout the County. | Office of Emergency Management | <ul style="list-style-type: none"> <li>• Dam Failure</li> <li>• Drought</li> <li>• Earthquake</li> <li>• Extreme Temperatures</li> <li>• Flood</li> <li>• High Wind/ Severe Storm</li> <li>• Karst/Sinkholes/Subsidence</li> <li>• Landslides</li> <li>• Tornado</li> <li>• Wildfire</li> <li>• Winter storm</li> </ul> | UASI funding, DHS grants, County funding | Ongoing | Successfully send out an alert using all available methods. | High | DEMS launched the new Fairfax Alerts system in the summer of 2014 and continues to look for new ways to alert residents including social media and WEA. Completed alert and warning annex for the EOP. Maintain and expand alert capabilities using all technology currently available. | Forever ongoing as things change. | Completed by the next planning cycle. |

|         |  |                   |   |  |             |  |      |  |  |  |
|---------|--|-------------------|---|--|-------------|--|------|--|--|--|
| 2010-12 | Identify funding opportunities to replace vulnerable or undersized culvert stream crossings with bridges or larger culverts to reduce flood hazards. Consider future climate projections when identifying "vulnerable and undersized." | Park Authority    | <ul style="list-style-type: none"> <li>Dam Failure</li> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul> | FEMA Hazard Mitigation Assistance Grants | Ongoing     | Develop list of vulnerable or undersized culverts by January 2012. Continue funding and stick to the replacement schedule. | High | PA has a trail development strategy plan that addresses this concern. Have developed a list of culverts to replace and have created schedule for replacement. (Trail master plan and trail elements are in that plan.) Funding is ongoing. 23,000 acres of parkland and 1,700 miles of trails. | Ongoing project, retain for next plan. | To be completed in the 2022–2027 planning cycle. |
| 2010-16 | Upgrade the New Alexandria/Belle View pump station fuel oil storage tanks from underground to above-ground storage.  | DPWES: Stormwater | <ul style="list-style-type: none"> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul>                      | County Funding                           | August 2021 | Complete Design by June 2017.  | High | The existing tanks were abandoned in place and all documentation was submitted to DEQ and fire marshal. The new tanks will be registered when installation and testing is completed.   | In progress                            |  |
| 2010-17 | Continue to seek voluntary buyouts of FEMAs repetitive   | DPWES: Stormwater | <ul style="list-style-type: none"> <li>All Hazards</li> </ul>   | FEMA Hazard Mitigation                   | Ongoing     | Continue to pursue buyouts for properties  | High | These projects are completed   | Ongoing                                | To be completed in the                           |

|         |   |                   |   |  |           |                                      |      |  |         |  |
|---------|---|-------------------|---|--|-----------|--------------------------------------|------|--|---------|--|
|         | loss properties within the floodplain.  |                   |   | Assistance Grants, County Funding  |           | that meet FEMA's benefit-cost ratio. |      | as funding is available.                                       |         | 2022–2027 planning cycle.                        |
| 2010-20 | Collaborate with FEMA to develop risk maps for the Cameron Run Watershed and the Belle View communities. Consider future climate projections in this map development. | DPWES: Stormwater | <ul style="list-style-type: none"> <li>All Hazards</li> </ul>   | FEMA Hazard Mitigation Assistance Grants and County funding  | Ongoing   |                                      | High | Progress is controlled by FEMA's schedule.                     | Ongoing | To be completed in the 2022–2027 planning cycle. |
| 2010-21 | Develop an outreach program aimed at assisting private dam owners with proper operation and maintenance.  | DPWES: Stormwater | <ul style="list-style-type: none"> <li>Dam Failure</li> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul> | <p>Hazard Mitigation Grant Program – 5% initiative funds</p> <p>FEMA has a national dam safety program: unsure if funding is available</p> <p>Virginia Floodplain Management Fund (administered by DCR Division of Dam Safety and Floodplain Management)</p> | July 2017 |                                      | High | This program will be completed when funding becomes available. | Ongoing | To be completed in the 2022–2027 planning cycle. |

|         |   |                                |  |   |               |   |        |   |   |  |
|---------|---|--------------------------------|--|---|---------------|---|--------|---|---|--|
| 2010-23 | Identify gaps in current Recovery Planning efforts within the County.   | Office of Emergency Management | <ul style="list-style-type: none"> <li>All Hazards</li> </ul>                            | County Funding  | July 2011     | Established metrics for review of plan by February 2011. Continue to review and update recovery plan as needed. | Medium | In 2012, Fairfax County published the Pre-Disaster Recovery Plan, which is scheduled to be revised in 2017. During that process, gaps will be identified and readdressed. Pre-Disaster Recovery plan was updated in 2020. | Ongoing, always improving upon.   | To be completed in the 2022–2027 planning cycle. |
| 2010-26 | Use fee, simple and/or permanent easement to prevent development in the highest priority undeveloped floodplain (and/or wetlands) areas.<br>Work with land trusts to purchase the land or conservation easements. Use these areas as public open space for passive recreational uses. | Park Authority                 | <ul style="list-style-type: none"> <li>Flood</li> </ul>                                  | FEMA Hazard Mitigation Assistance Grants, County Funding              | December 2013 | Ongoing, continue to achieve goal of preserving open spaces.  | Medium | Yes, continue to work with land trust/ transfers. Press for more open space. It is a day-to-day operation.  | Completed, but ongoing. Seeking additional funding for future projects. | To be completed in the 2022–2027 planning cycle. |
| 2010-27 | Continue development of a comprehensive River Flood Response System for New Alexandria/ Belle View and Huntington in partnership with the National Weather Service and the U.S. Army Corps of Engineers.  | DPWES: Stormwater              | <ul style="list-style-type: none"> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul> | FEMA Hazard Mitigation Assistance Grants, US Army Corps of Engineers, | Ongoing       | None  | Medium | The projects are completed as funding becomes available Huntington now has their levee installed. Realignment flood   | Ongoing.  | To be completed in the 2022–2027 planning cycle. |

|         |   |   |  |  |         |  |        |  |                       |  |
|---------|---|---|--|--|---------|--|--------|--|-----------------------|--|
|         |   |   |  | County Funding                           |         |  |        | responses plan for Alexandria and Belle View based on new levee in Huntington  |                       |  |
| 2010-29 | Conduct annual outreach to each FEMA-listed repetitive loss and severe repetitive loss property owner. Provide information on mitigation programs (grant assistance, mitigation measures, flood insurance information) that can assist them in reducing their flood risk. | DPWES: Stormwater   | <ul style="list-style-type: none"> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul> | County Funding                           | Ongoing |  | Medium | This action was reassigned to DPWES-Stormwater. It is performed annually as part of the CRS Program.   | Ongoing               | To be completed in the 2022–2027 planning cycle. |
| 2010-30 | Promote structural mitigation to assure redundancy of critical facilities, to include but not limited to roof structure improvement, meeting or exceed building code standards, upgrade of electrical panels to accept generators, etc.                                   | Office of Emergency Management  | <ul style="list-style-type: none"> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul> | FEMA Hazard Mitigation Assistance Grants | Ongoing |  | Medium | This is completed as funding becomes available.  | Ongoing               | To be completed in the 2022–2027 planning cycle. |
| 2010-32 | Encourage public and private water conservation plans, including consideration of rainwater catchment system.   | Park Authority, Stormwater, DPWES: Stormwater, Northern Soil and Water Conservation Authority | <ul style="list-style-type: none"> <li>Drought</li> </ul>                                | County Funding                           | Ongoing |  | Low    | This is completed as funding becomes available. The FCC Office of Environmental and Energy Coordination program (called HomeWise) educates the | Ongoing, Low priority | To be completed in the 2022–2027 planning cycle. |

|         |  |                   |  |  |               |  |      |   |                |  |
|---------|--|-------------------|--|--|---------------|--|------|---|----------------|--|
|         |  |                   |  |  |               |  |      | public on water and electricity.  |                |  |
| 2010-33 | Work with the Virginia Department of Forestry to review local zoning and subdivision ordinances to identify areas to include wildfire mitigation principles.   | Park Authority    | <ul style="list-style-type: none"> <li>Wildfire</li> </ul>                   | FEMA Hazard Mitigation Assistance Grants | Ongoing       |  | Low  | Natural Resources Group and the Virginia Department of Forestry, along with local forestry departments meet regularly and share wildfire mitigation plans and plan activities such as controlled burns. | Completed      |  |
| 2017-1  | Develop an Emergency Action Plan for the Huntington Levee Project.   | DPWES: Stormwater | <ul style="list-style-type: none"> <li>Dam Failure</li> <li>Flood</li> </ul> | FEMA Hazard Mitigation Assistance Grants | December 2018 |  | High |   | Completed 2018 |  |
| 2017-3  | Secure funding to purchase additional equipment/trucks to enhance our current level of service to be able to dedicate one piece of equipment/truck to each police station within Fairfax County or identify other resources to accomplish this need. | DPWES: Stormwater | <ul style="list-style-type: none"> <li>Winter storm</li> </ul>               | County Funding                           | June 2020     | Secure funding to purchase at least two additional/trucks /pieces of equipment each year for the next four years or establish a contract that would dedicate resources to each County police station by November 2017. | High |   | Ongoing        |  |

|        |  |   |  |  |               |   |      |   |                |  |
|--------|--|---|--|--|---------------|---|------|---|----------------|--|
| 2017-4 | Coordinate with and support the Virginia Department of Transportation in the identification and resolution of road flooding and drainage issues related to VDOT roadways. In the prioritization scheme, consider climate change impacts. | DPWES: Stormwater. Change this to FCDOT as the lead for this project; they can work side by side. | <ul style="list-style-type: none"> <li>• Dam Failure</li> <li>• Flood</li> <li>• High Wind/ Severe Storm</li> </ul>                          | VDOT Maintenance Funding                                 | Ongoing       | Prioritization and implementation of higher priorities. | High |   | Ongoing        | To be completed in the 2022–2027 planning cycle. |
| 2017-5 | Armor stream bank and construct a flood wall to prevent stream bank erosion and flooding at the Noman M. Cole, Jr. Pollution Control Plan.   | DPWES: Wastewater   | <ul style="list-style-type: none"> <li>• Flood</li> <li>• High Wind/ Severe Storm</li> </ul>   | County Funding   | February 2018 | Construction project management review and inspections. | High |   | Completed 2018 |  |
| 2017-6 | Design and construct safe rooms in critical facilities to house personnel and community members during high wind events.   | Office of Emergency Management  | <ul style="list-style-type: none"> <li>• Earthquake</li> <li>• High Wind/ Severe Storm</li> <li>• Tornado</li> <li>• Winter storm</li> </ul> | FEMA Hazard Mitigation Assistance Grants, County Funding | Ongoing       |   | High | This action replaces 2010-11 and provides for storm proofing any critical facilities, not only shelters. DEMS discusses mitigation measures and finding sources before, during, and after construction with builders. | Ongoing        | To be completed in the 2022–2027 planning cycle. |
| 2017-7 | Provide emergency utility capabilities for critical facilities. This includes but is not limited to providing generator and emergency water hookups.   | Office of Emergency Management  | <ul style="list-style-type: none"> <li>• All Hazards</li> </ul>  | FEMA Hazard Mitigation Assistance Grants, County Funding | Ongoing       |   | High | This action replaces 2010-1. DEMS discusses mitigation measures and funding   | Ongoing        | To be completed in the 2022–2027 planning cycle. |

|         |  |                   |   |  |                                      |                     |        |  |         |  |
|---------|--|-------------------|---|--|--------------------------------------|---------------------|--------|--|---------|--|
|         |  |                   |   |  |                                      |                     |        | sources before, during, and after construction with builders.  |         |  |
| 2017-8  | Improve the County's Community Rating System (CRS) classification from Class 6 to Class 5 by documenting services that are currently being provided.                                   | DPWES: Stormwater | <ul style="list-style-type: none"> <li>• Dam Failure</li> <li>• Flood</li> </ul>                                    | County Funding   | Ongoing                              |                     | Medium |  | Ongoing | To be completed in the 2022–2027 planning cycle. |
| 2017-9  | Provide routine inspections and maintenance of dams to ensure they are functional.   | DPWES: Stormwater | <ul style="list-style-type: none"> <li>• Dam Failure</li> <li>• Flood</li> <li>• High Wind/ Severe Storm</li> </ul> | County Funding   | Ongoing                              | Routine Maintenance | Medium |  | Ongoing | To be completed in the 2022–2027 planning cycle. |
| 2017-10 | Continue to implement flood mitigation projects for communities in Fairfax County that are exposed to severe flooding risk. Include updated climate data when identifying communities. | DPWES: Stormwater | <ul style="list-style-type: none"> <li>• Dam Failure</li> <li>• Flood</li> <li>• High Wind/ Severe Storm</li> </ul> | FEMA Hazard Mitigation Assistance Grants, County Funding | Ongoing                              |                     | Medium | Identifying new projects as rainfall totals and flooding patterns change. Executing modeling to determine the best option. | Ongoing | To be completed in the 2022–2027 planning cycle. |
| 2017-11 | Update flood information website to include a link to the Office of Emergency Management website and the private dam owners' outreach materials.                                       | DPWES: Stormwater | <ul style="list-style-type: none"> <li>• Dam Failure</li> <li>• Flood</li> </ul>                                    | County Funding   | Check links at least once every year |                     | Low    | Updating information based on new rainfall totals and flooding patterns. Executing modeling to                             | Ongoing | To be completed in the 2022–2027 planning cycle. |

|         |  |                   |  |  |         |  |        |  |         |  |
|---------|--|-------------------|--|--|---------|--|--------|--|---------|--|
|         |  |                   |  |  |         |  |        | determine the best option.   |         |  |
| 2017-12 | Support mitigation of priority flood-prone structures through promotion of acquisition/demolition, elevation, flood proofing, minor localized flood control projects, mitigation reconstruction where feasible. Use FEMA HMA programs where appropriate. Consider climate data in these mitigation projects. | DPWES: Stormwater | <ul style="list-style-type: none"> <li>Flood</li> <li>High Wind/ Severe Storm</li> </ul> | FEMA Hazard Mitigation Assistance Grants | Ongoing |  | Medium | Action carried over from previous plan; still relevant and necessary. Identifying new projects as rainfall totals and flooding patterns change. Executing modeling to determine the best option. | Ongoing | To be completed in the 2022–2027 planning cycle. |

Table 35: New Mitigation Actions

| Project No. | Agency/ Department Mitigation Action   | Lead Agency/ Department/ Organization | Hazard  | Funding Source  | Target Completion Date | Interim Measure of Success   | Priority | Comment   |
|-------------|--|---------------------------------------|---|---|------------------------|--|----------|---|
| 2022-1      | Strengthen Department of Emergency Management and Security's Continuity Program                                | DEMS Continuity Program               | <ul style="list-style-type: none"> <li>All Hazards</li> </ul> | County funds, grants  | Ongoing                | Being able to effectively prepare for and mitigate against disruptions that may hamper the operations of the County. | High     | Although the Continuity Program is not the primary responder for the identified hazards, it plays a critical role in increasing the resilience of county operations, preparing the County to operate in adverse conditions, and in mitigating the impact of realized hazards. |
| 2022-2      | Work with FEMA to re-examine flood zones and update FIRMS. Use this information to reevaluate NFIP activities. | DPWES: Stormwater                     | <ul style="list-style-type: none"> <li>Flood</li> </ul>       | FEMA Hazard Mitigation Assistance Grants, County's capital budget | Ongoing                | Multi-year project; meet FEMA deadlines throughout project.  | Medium   | Use this information to reevaluate NFIP activities.   |