COMMONWEALTH of VIRGINIA

Office of the Governor

Brian J. Moran
Secretary of Public Safety
and Homeland Security

November 5, 2015

MEMORANDUM

TO: The Honorable Walter A. Stosch, Co-chair, Senate Finance Committee
The Honorable Charles J. Colgan, Co-chair, Senate Finance Committee
The Honorable Thomas K. Norment, Co-chair, Senate Courts of Justice Committee
The Honorable Mark D. Obenshain, Co-chair, Senate Courts of Justice Committee
The Honorable S. Chris Jones, Chair, House Appropriations Committee
The Honorable L. Scott Lingamfelter, Chair, House Militia, Police and Public Safety Committee

FROM: The Honorable Brian J. Moran, Secretary of Public Safety and Homeland Security

SUBJECT: Commonwealth Threat and Hazard Identification and Risk Assessment (C-THIRA) Report

The *Code of Virginia,* §2.2-222.1(D), directs the Secretary of Public Safety and Homeland Security to annually prepare and provide a Commonwealth Threat and Hazard Identification and Risk Assessment (C-THIRA). The first C-THIRA was produced in 2014. This report updates the C-THIRA to include 2015 data.

BJM/dpp

Enclosure

SECRETARY OF PUBLIC SAFETY AND HOMELAND SECURITY

2015 Commonwealth Threat and Hazard Identification and Risk Assessment (C-THIRA)

§2.2-222.1(D)

November 2015

Table of Contents

Preface

This report is provided in accordance with the *Code of Virginia*, §2.2-222.1(D), which states:

> The Secretary shall develop annually the Commonwealth Threat Hazard Identification and Risk Assessment (C-THIRA) Report to identify threats and hazards and determine capability targets and resource requirements necessary to address anticipated and unanticipated risks to state and local preparedness. The C-THIRA Report shall: (i) identify a list of the threats and hazards of primary concern to the Commonwealth; (ii) describe the threats and hazards of concern, showing how they may affect the Commonwealth; (iii) assess each threat and hazard in context to develop a specific capability target for each core capability consistent with federal National Preparedness Goals; and (iv) estimate the resources required to achieve the capability targets through the use of community assets and mutual aid, while also considering preparedness activities, including mitigation opportunities. Additionally, the C-THIRA Report shall assess the Commonwealth's state of planning, organizing, training, equipping, exercising, and evaluating, and its ability to take corrective action, as well as any shortfalls in these areas. The C-THIRA Report shall also serve as the Commonwealth's strategic approach to improving future preparedness and shall be delivered to the Chairmen of the Senate Committees on Finance and for Courts of Justice and the Chairmen of the House Committees on Appropriations and Militia, Police and Public Safety no later than November 1 of each year.

The report was developed in conjunction with the Virginia Department of Emergency Management (VDEM). Acknowledgement goes to the Federal Emergency Management Agency (FEMA) Threat and Hazard Identification and Risk Assessment (THIRA) process and to the various Virginia planning district commissions and councils for their participation in mitigation and catastrophic planning.

Executive Summary

The threats and hazards to the Commonwealth identified in this report functionally parallel the federally-mandated Threat and Hazard Identification and Risk Assessment (THIRA). These include: hurricanes, earthquakes, winter storms, wildfires, avian influenza outbreaks, pandemic flu epidemics, coronal mass ejections, dam failures, radiological events, vehicle-borne improvised explosive devices, improvised nuclear devices, coordinated small groups assaults, and cyber attacks.

Virginia's core capabilities targets are outlined for each core capability, consistent with the federal National Preparedness Goal. Core capability targets provide guidance on the specific types and levels of capability that the Commonwealth is expected to develop and sustain. Self-reporting, training, current mitigation activities, local C-THIRA submissions, and other direct inputs were used to identify localities' resource strengths and weaknesses. Localities reported slight improvements from last year for the majority of core capabilities.

CHAPTER 1 – PRIMARY THREATS AND HAZARDS IDENTIFICATION

In concert with the FEMA-mandated THIRA process and in updating last year's C-THIRA, the identified threats and hazards to the Commonwealth were classified into three categories of scenarios: natural, technological, and human-caused. Ten threat and hazard scenarios were carried over from last year to provide a baseline for planning and evaluation. In addition, one natural hazard and one human-caused threat were added in 2015 to comport with the FEMA THIRA.[1] The threats and hazards identified could have significant life, multi-sector, property, and social impacts.

Natural threats and hazards are those events that occur as a result of bad weather conditions, geological conditions, biological conditions, space weather, or a combination of these conditions. The natural threats and hazards identified are:

- Hurricanes
- Earthquakes
- Winter storms
- Wildfires
- Avian influenza outbreaks
- Pandemic flu epidemics
- Coronal mass ejections

Technological threats and hazards are associated with accidental failures of manmade systems or critical infrastructures. The technological threats and hazards identified are:

- Dam failures
- Radiological events

Human-caused threats and hazards are those events that result from intentional human action, like terrorism. The human-caused threats and hazards identified are:

- Vehicle-borne improvised explosive devices (VBIED)
- Improvised nuclear devices (IND)
- Coordinated small groups assaults
- Cyber attacks

[1] The added natural hazard is a coronal mass ejection, a naturally-occurring massive solar explosion that can cause an electromagnetic disruption to the power grid and have cascading impacts. The added human-caused threats are a coordinated small groups attack, designed to inflict damage and terror, and cyber attacks, which threaten critical infrastructure. The coronal mass ejection and the coordinated small groups attack were added to continue the functional parallel with the federally-mandated Threat and Hazard Identification and Risk Assessment (THIRA); they do not correspond with a specific hazard or threat to Virginia, but do correspond with concerns at the national level that could impact the Commonwealth.

CHAPTER 2 – DESCRIPTION OF THREATS AND HAZARDS

NATURAL EVENTS

Hurricanes contain the synergistic elements of high winds, storm surge, and rainfall in a short time period. For the purposes of this report, this event is predominantly associated with the coast and the activities and impacts associated with hurricanes are presumed to be consistent with other coastal storms. It should be noted, however, that hurricanes have traveled inland and created extensive riverine flooding and landslides.[2]

Hurricanes are categorized by sustained wind speed and, using the Saffir-Simpson Hurricane Wind Scale, are given a rating of 1 to 5. This scale also estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. It is important to note that the Saffir-Simpson scale does not account for storm surge, which usually leads to the greatest loss of life.

Saffir-Simpson Hurricane Wind Scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters.
2	96-110 mph	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage.
3 (major)	111-129 mph	**Devastating damage will occur:** Well-built framed homes may incur major damage or removal of roof decking and gable ends.
4 (major)	130-156 mph	**Catastrophic damage will occur:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most of the area will be uninhabitable for weeks.
5 (major)	157 mph or higher	**Catastrophic damage will occur:** Most framed homes will be destroyed, with total roof failure and wall collapse. Power outages will last for weeks, possibly months. Area will be uninhabitable for weeks.

[2] The largest loss of life from a hurricane in Virginia was when the remnants of Hurricane Camille moved into the inland areas of the Commonwealth from the west in 1969; 153 people died from flooding and mudslides.

In Virginia, the Hampton Roads and Eastern Shore regions are particularly susceptible to impacts from coastal storms. Due to their elevations, these regions are at an increased risk of flooding from the storm surges and immense rainfall that hurricanes can bring. Most of the Eastern Shore is fewer than six feet above mean sea level and the Hampton Roads region has been designated as the second most vulnerable area to flooding on the East Coast.

Maximum surge heights vary based on the modeled storm scenarios. Gloucester, Northumberland and York counties and the cities of Newport News, Norfolk, Portsmouth and Virginia Beach could expect to see greater than 15-feet surge heights during a Category 3 or 4 event.[3]

If a Category 3 or 4 hurricane occurred, 90 percent of the population in the following localities would be directly at risk due to the storm surge flooding:

- Accomack County
- City of Hampton
- City of Newport News
- City of Norfolk
- City of Poquoson
- City of Virginia Beach
- Northampton County

Figure 1 depicts the approximate areas prone to flood due to storm surge, based on the strength of the hurricane.

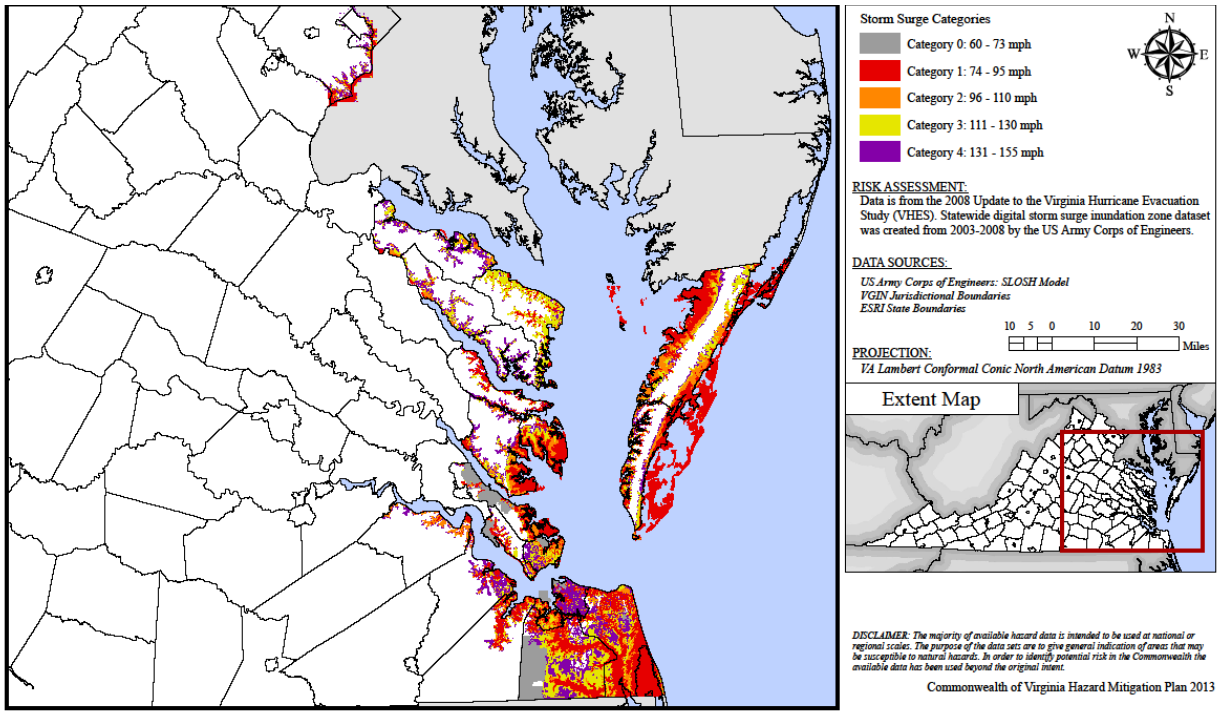


Figure 1: Hurricane Storm Surge Map (2013 Hazard Mitigation Plan).

[3] Commonwealth of Virginia Hazard Mitigation Plan, 2013, Section 3.7 Flooding.

As recently as September 29, 2015, the Governor declared a state of emergency due to the impending threat from flooding and heavy rainfall, as well as the projections that Hurricane Joaquin would impact the Commonwealth. Even though the track of Joaquin ended up turning out to sea, the damages sustained during this event from flooding were in excess of $18 million. The National Weather Service declared that had Joaquin tracked towards Virginia and up the Chesapeake Bay, this would have been an unprecedented event in terms of damage and loss of life. According to the Department of Homeland Security National Infrastructure Simulation and Analysis Center at Sandia National Lab, a Category 2 storm following Joaquin's predicted path could cause over $13 billion in damages to the mid-Atlantic region.[4]

Earthquakes, although rare on the East Coast, have the capacity to be devastating in impact. Historically, earthquakes have occurred in Virginia in three primary areas:

- Eastern Tennessee Seismic Zone (far Southwest Virginia)
- Giles County Seismic Zone (Southwest Virginia)
- Central Virginia Seismic Zone (Central Virginia)

As Virginia is not located near a tectonic plate edge, quakes that occur within the state are referred to as intraplate earthquakes.[5] East coast and central U.S. intraplate earthquakes can be felt at extreme distances from the epicenter of an event. Figure 2 provides a representation of known earthquake epicenters in Virginia.

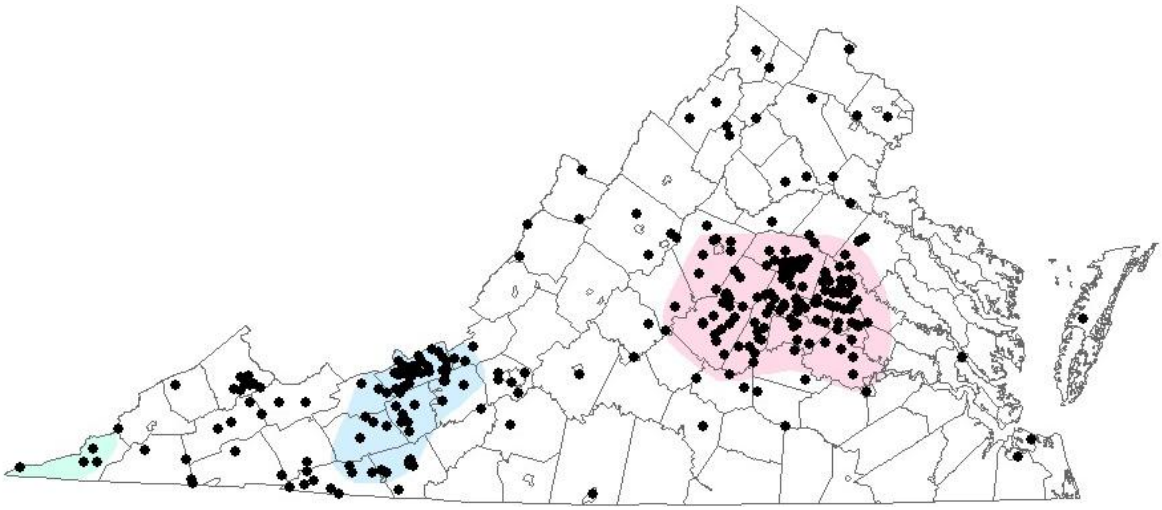


Figure 2. Earthquake Epicenters in Virginia (Department of Mines, Minerals, and Energy).

The most recent, significant earthquake in Virginia occurred in the Central Virginia Seismic Zone on August 23, 2011, with the epicenter near the Town of Mineral in Louisa County. The Louisa earthquake had a Richter Scale rating of 5.8 and a maximum perceived intensity of VII (very strong) on the Modified Mercalli Intensity Scale.

[4] National Protection and Programs Directorate, Office of Cyber and Infrastructure Analysis, *Mid-Atlantic Hurricane Scenario Analysis Report*, 2015.
[5] Virginia Tech Seismological Observatory, *available at* http://www.magma.geos.vt.edu/vtso/.

Comparison of Earthquake Scales

Richter Magnitude Scale	Modified Mercalli Intensity Scale
1.0 to 3.0	I
3.0 to 3.9	II to III
4.0 to 4.9	IV to V
5.0 to 5.9	VI to VII
6.0 to 6.9	VII to IX
7.0 and Higher	VIII or Higher
Defined Modified Mercalli Intensity Scale Rating	
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt by persons indoors, especially on upper floors of buildings. Vibrations similar to the passing of a truck; many people do not recognize an earthquake is occurring. Standing motor cars may rock slightly.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors, disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Dishes and windows may be broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Total destruction. Lines of sight and level are distorted. Objects thrown into the air.

The intensity of the Louisa earthquake was enough to require two schools to be torn down due to irreparable damage. It also caused chimneys to collapse, hundreds of homes to suffer foundation damage, and dozens of private wells to be functionally destroyed. Multiple natural gas line leaks in nearby localities were also reported. The total structural damage in Louisa was estimated to be in

excess of $80 million. The estimated loss to inventory, building contents, and income was greater than $100 million.

During this event, the shaking was so severe that it caused two nuclear reactors to automatically shut down at the North Anna Nuclear Power Plant. Inspections for damage were extensive; reactor restart was on November 11, 2011, roughly eleven weeks after the event.

Hazards U.S. (HAZUS) is FEMA's nationally-applicable, standardized estimate methodology, which uses a geographic information system (GIS) to show damages as a result of impacts from earthquakes, floods, and hurricanes. Using this method, the estimated impacts from the Louisa earthquake can be visually presented. As Figure 3 illustrates, earthquakes in Virginia, although considered to be low-probability, can be a high-consequence event.

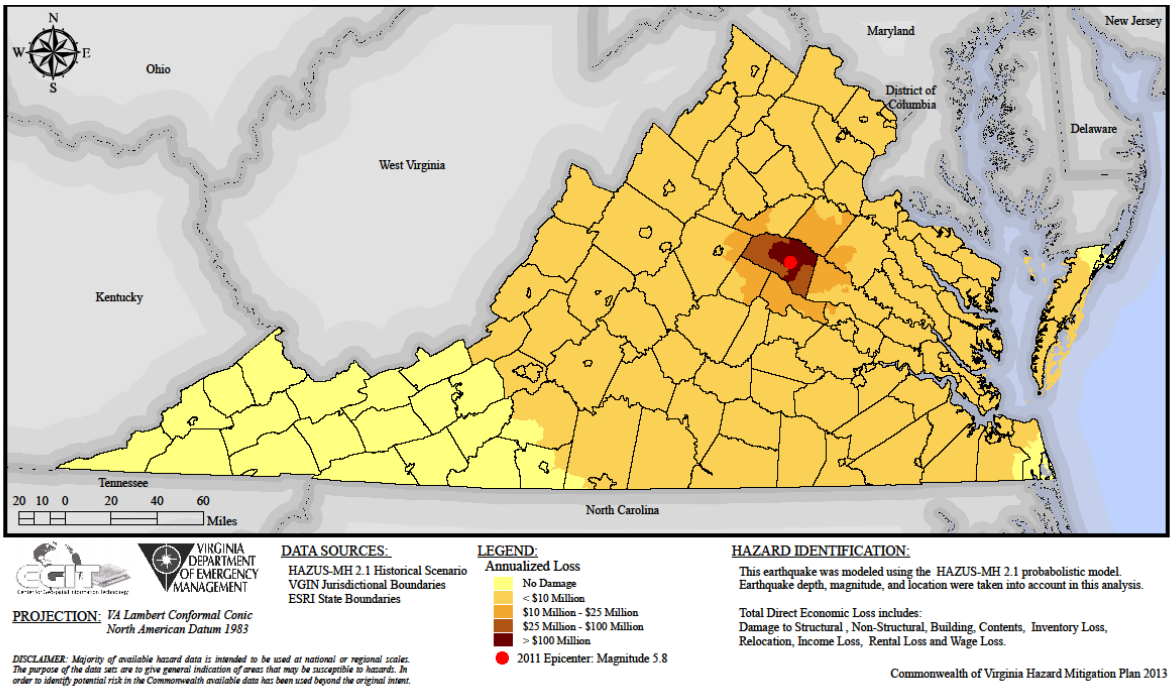


Figure 3. 2011 Louisa Earthquake (2013 Hazard Mitigation Plan).

Winter storms in Virginia often cause extensive power outages and roads to be blocked by snow and ice. Virginia's biggest winter weather threat comes from a storm pattern known as a northeaster or "nor'easter," which occurs when warm, moist air from the ocean combines with cold winds from the northeast.

Nor'easters may result primarily in rain, snow, ice, or some combination thereof. Strong winds also characterize nor'easters, often resulting in coastal flooding and erosion. The combination of heavy, frozen precipitation and strong winds often causes damage to trees and utility lines. Nor'easters may occur from September through April, but are usually at their worst in January, February, and March.

Some of the historic winter weather extremes recorded in Virginia include the following:[6]

- *Lowest temperature*: -30°F, recorded on January 21, 1985, at the Mountain Lake Biological Station in Giles County.
- *Greatest one-day snowfall*: 34 inches, recorded on February 6, 2010, at the Lincoln weather station near Purcellville, Virginia.
- *Highest single storm snowfall*: 48 inches, recorded January 6-7, 1996, at Big Meadows.
- *Greatest monthly snowfall*: 54 inches during February 1899, recorded in Warrenton.
- *Greatest seasonal snowfall*: 124.2 inches during the 1995-1996 winter season, recorded in Wise County.

Major winter storms typically affect large areas of the nation. During the 1990s, winter storms in Virginia resulted in more localities qualifying for major disaster declarations than any other hazard.

Virginia has received two presidential disaster declarations for winter storms in the last six years, both occurring during the 2009–2010 winter. These two storms, when combined with the additional winter weather between the declarations, resulted in the period of impact being popularly referred to as "Snowmageddon."

- December 18-21, 2009: A nor'easter that formed over the Gulf of Mexico developed into a winter storm affecting much of the East Coast. Buchanan County reported 27 inches of snow on December 19. This presidentially-declared disaster (FEMA-1874-VA-DR) was issued on February 16, 2010.
- February 4–7, 2010: A nor'easter affecting northern Virginia; the Lincoln weather station near Purcellville in Loudoun County reported 34 inches of snow on February 6. This presidentially-declared disaster (FEMA -1905-VA-DR) was issued on April 27, 2010.

In combination with power outages caused by winter storms, extreme cold can present significant potential for loss of life and/or sheltering issues. Vulnerable populations can exacerbate these issues. In February 2015, the Governor declared a state of emergency due to heavy snowfall and cold temperatures. Vulnerable populations had difficulties leaving their residence due to snowpack/ice blocking their driveways.

The Commonwealth has identified three regional hazard mitigation plans that specify extreme cold as a high concern. These regions are the Central Shenandoah Valley, the New River Valley, and the Northern Shenandoah Valley. In the regions identified, the cities of Radford and Harrisonburg both have poverty-level residents equal to approximately 28 percent of their total population.

Wildfires can have significant local and regional impacts, as well as extensive resource requirements. Wildfire poses an extraordinary hazard when it transitions from forest or range land into woodland-urban interface locations putting populations, critical infrastructure, local economies, historical resources, and homes at significant risk.

[6] Commonwealth of Virginia Hazard Mitigation Plan, 2013, Section 3-9 Winter Weather.

Three critical factors determine the formation of a wildfire hazard: fuel, topography, and weather. The weather conditions considered to be most supportive of wildfire formation include drought and high winds.

With respect to topography:

- When land rises in height such as up a mountainside, the fire spreads more quickly upward.
- When land drops in height such as descending into a valley, the fire spreads slower going down.
- When the land is flat, winds have the ability to carry embers or flaming debris farther distances.

In their local hazard mitigation plans, 26 jurisdictions in Virginia self-identified wildfire as a "medium-high" risk. Four jurisdictions, Albemarle, Clarke, Roanoke, and Warren counties, have self-identified wildfire as a "high risk."

Using Virginia Department of Forestry (VDOF) criteria, Figure 4 depicts Virginia's overall wildfire risk assessment.

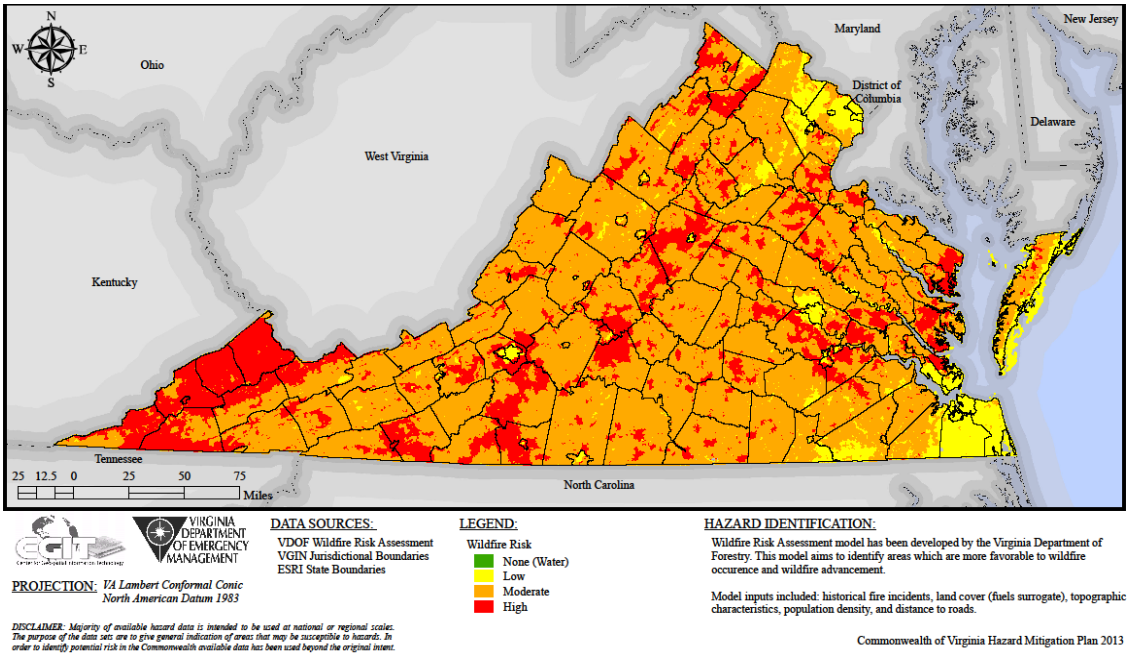


Figure 4. Wildfire Risk (2013 Hazard Mitigation Plan).

According to National Climatic Data Center (NCDC) data on crop and property damage, the Commonwealth can expect approximately $377,009 in damages per year from wildfire-related events. However, a more realistic estimate of probable loss for the Commonwealth, using information supplied by VDOF, is expected annual damages of approximately $7,189,330. This dollar value was calculated using wildfire damages from 1999 through 2008 and adjusting for inflation. One reason for the difference in the two annualized loss estimates is that the VDOF data includes all types of damages (including timber, structures, and personal property), while NCDC data only documented damages to property and crops. Additionally, the VDOF database is a much

more complete record of all wildfires in Virginia, while NCDC is known to underestimate the true quantity of events and damages, not just for wildfire, but for all event types.

Avian Influenza (AI) is a disease with multiple strains and has significant potential to devastate Virginia's poultry businesses and Virginia's economy. In 2012, according to the Virginia Poultry Federation, the industry provided a direct economic impact of $3,608,859,090 to the Commonwealth and an overall contribution of $8,062,929,510 in economic activity. The bulk of the poultry industry is located in or near the northern and central Shenandoah Valley.[7]

According to the Virginia Poultry Federation, in 2012, the poultry industry in Virginia:

- Generated approximately 13,400 direct jobs.
- Generated approximately 28,500 indirect jobs.
- Supported the livelihood of more than 1,100 farm families.
- Ranked in the top 10 in the U.S. in production of chicken and turkey.

The most recent avian flu outbreak in Virginia was in 2007 when an H5N1 subtype was identified in turkeys through routine testing. Immediate bans on poultry shipping and other activities were ordered by the State Veterinarian. This order affected 17 counties in the Shenandoah Valley: Albemarle, Alleghany, Augusta, Bath, Clarke, Culpeper, Frederick, Greene, Highland, Madison, Orange, Page, Rappahannock, Rockbridge, Rockingham, Shenandoah, and Warren.

From December 2014 through June 2015, the U.S. Department of Agriculture and U.S. Department of Interior detected H5 infections in U.S. poultry, wild birds, and captive wild birds. During this period, 15 states experienced outbreaks in domestic poultry and 6 states experienced outbreaks only in wild birds. Virginia was not among these states.

Pandemic flu epidemics also threaten the health of Virginia's residents, the continuity of Virginia's businesses and government, as well as the lives of the elderly, the very young, and those with suppressed immune systems.

A recent pandemic flu outbreak occurred in 2009. This H1N1influenza ("swine flu") outbreak initiated in Vera Cruz, Mexico and spread globally. In April 2009, the flu event was the first situation ever declared by the World Health Organization (WHO) to be a "public health emergency of international concern." In June, it was declared by both WHO and the Centers for Disease Control and Prevention in the U.S. to be a pandemic. In August of 2010, the pandemic was officially declared over. The final, approximate death count was estimated to be in excess of 284,000 people.

In November of 2007, the Federal Reserve Bank of St. Louis published a study of the economic impacts of the 1918 flu epidemic entitled, *Economic Effects of the 1918 Influenza Pandemic Implications for a Modern-day Pandemic.* Among other conclusions, the study indicates that impacts of a modern day pan-flu epidemic would include:

[7] The Virginia Department of Agriculture and Consumer Services (VDACS), the Virginia Department of Environmental Quality, and the Virginia Cooperative Extension Services of Virginia Polytechnic Institute and State University all acknowledge the importance of and provide information about this hazard.

- Some businesses experiencing revenue losses in excess of 50 percent.
- Job loss.
- Health care services lacking the capacity to provide services.

In October 2014, in response to the Ebola virus outbreak in Liberia, Guinea, and Sierra Leone, the Virginia Department of Health (VDH), Virginia State Police, and VDEM established a unified command structure to plan for and respond to any potential incidents in Virginia. Between October 27, 2014 and September 30, 2015 VDH has entered 1,984 travelers from that region into the monitoring protocol for Ebola.

Coronal Mass Ejection (CME) is a low-probability, high-impact space weather event. CMEs often occur at the same time as solar flares but they are distinct events with different emissions and different effects. CMEs are massive explosions of magnetic field and plasma from the Sun's outer atmosphere that result from fluctuations in its magnetic fields. The magnetized particles are blasted out into space and may affect Earth in under four days if ejected in our direction.

If Earth is in the CME's pathway, a geomagnetic storm (i.e. a temporary disturbance of the earth's magnetic field) can occur. Geomagnetic storms contribute to the aurora at the two poles and, more significantly, these storms interfere with a variety of human technologies. High frequency radio waves can be distorted, which can cause radios to emit static and GPS coordinates to drift. Supervisory Control and Data Acquisition (SCADA) system control errors can result or components could be destroyed. The interaction can also create electrical currents in utility grids, which can overload electrical systems.

Earth has experienced the effects of CMEs in the past. The most significant event in history was the Carrington event in 1859, but there have been significant events in 1903, 1909, 1921, 1989, 2000, and 2003. During the 1859 Carrington event, an intense geomagnetic storm induced an electrical current in long telegraph wires, resulting in destruction of telegraph keys, and, in some cases, causing fires. An event of this size today would have the potential to cause major disruptions to the power grid and communications systems, due to the sheer size of modern systems and our dependence on them. For example, it has been estimated that if a geomagnetic storm similar to the 1921 event were to occur today, it could damage or destroy more than 300 transformers leaving over 130 million people without power for months, potentially years.

The loss of electricity could impact water distribution, sewage treatment and disposal, refrigeration, lighting, heating, cooling, and cooking for much of America. Transportation systems, particularly train transport, could be disrupted. Banking and other commercial activities could be curtailed. Long distance communications systems may also be disrupted.

Solar coronal mass ejections most frequently occur when the 11-year sunspot cycle peaks, although they can occur at any time. However, scientists estimate that the recurrence interval (the average time between storms of a certain magnitude) for a storm the strength of the Carrington event is on the order of 400 to 500 years. But the frequency of geomagnetic storms that could still cause significant damage on the earth is estimated at less than 100 years. Weak events happen annually.

TECHNOLOGICAL EVENTS

Dam failures present significant and recognized downstream impacts. Virginia is home to only two natural lakes: Lake Drummond in the Great Dismal Swamp and Mountain Lake in Giles County; all other lakes are a result of impoundments created by dams or reservoirs.

According to the *2015 Report Card for America's Infrastructure* generated by the American Society of Civil Engineers, Virginia has 1,789 regulated dams in Virginia, which ranks 11th nationally. Of these regulated dams, 382 are classified as "high-hazard potential" dams, of which 141 do not meet current dam safety standards:

> High Hazard Potential is defined where an impounding structure failure will cause probable loss of life or serious economic damage. "Probable loss of life" means that impacts will occur that are likely to cause a loss of human life, including but not limited to impacts to residences, businesses, other occupied structures, or major roadways. Economic damage may occur to, but not be limited to, building(s), industrial or commercial facilities, public utilities, major roadways, railroads, personal property, and agricultural interests. "Major roadways" include, but are not limited to, interstates, primary highways, high-volume urban streets, or other high-volume roadways.[8]

The report also estimates that the rehabilitation cost for 440 high and significant hazard dams in Virginia is $592 million to address deficiencies.

In its *2013 Performance Report for the State of Virginia*, the Association of State Dam Safety Officials indicates that approximately 50 of Virginia's high-hazard dams are in "poor" condition and another 10 are in "unsatisfactory" condition. This organization defines these two conditions as follows:

- *Poor*: A dam safety deficiency is recognized for loading conditions which may realistically occur. Remedial action is necessary.
- *Unsatisfactory*: A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

The location of the dam and the level of failure are the two key factors associated with potential impacts from an event of this nature. If there is a catastrophic collapse of any of Virginia's at-risk, high-hazard dams, then significant life, economic, and infrastructure consequences may occur in the inundation zone. Lake Moomaw is an example of an impounded body of water where, if the Gathright Dam were to fail catastrophically, there would be significant and lasting consequences for multiple downstream localities.

[8] 4 VA. ADMIN. CODE § 50-20-40 (Supp. 2015).

Radiological events at a nuclear power station are classified as a low-probability, high-consequence event. They represent a potential hazard of such consequence that all states with nuclear reactors are required to perform exercises evaluated by the Nuclear Regulatory Commission (NRC). In addition to the testing process, the NRC provides guidance on the physical protection of facilities, material controls, and accounting for special nuclear materials. FEMA, in coordination with the NRC and other federal agencies, has assisted in identifying response priorities and processes for a radiological event.

Virginia has two nuclear reactors, one in Surry County and one in Louisa County. The areas around these sites are monitored at all times with radiation detectors. Should an event occur, it would fall under one of four classifications with actions noted, as required.

- *Notification of an Unusual Event*: Detection of a minor problem; no release of radioactive matter is expected; no danger to the public and no special precautions are needed.
- *Alert*: A minor incident has occurred; a small amount of radioactive matter might be released within the station; no danger to the public and no special precautions are needed.
- *Site Area Emergency*: A more serious incident has happened; a possibility of small amounts of radioactive material could be released into the area immediately surrounding the site; listen for instructions from the local television or radio station broadcasting emergency information.
- *General Emergency*: The most serious type of event; radioactive material may be released outside the station site, sirens will sound; a general emergency may require that prompt, specific steps or actions be taken to protect oneself or family; listen for instructions from a local television or radio broadcasting emergency information.

Depending on the level of the event and weather conditions, specific consequences can include the following:

- A requirement for nearby residents to evacuate or shelter in place.
- A negative impact on agriculture and farming products, especially milk.
- Loss of critical infrastructure and a key resource.
- Power outages.
- Environmental impacts.
- Closure of roads and shipping/transportation facilities due to downwind impacts.

As of the time of this report, Virginia has not experienced an event classified greater than a notification of an unusual event. One such notification occurred as a result of the Louisa earthquake that forced the shutdown of the North Anna reactors, which was only 11 miles from the epicenter. Nevertheless, the impacts from events such as Chernobyl, Three Mile Island, and, most recently, Fukushima illustrate the need to identify this as a hazard and risk.

Radiological events can also occur with accidents or misuse of radiological materials that are found commonly around the Commonwealth, often in the medical or construction industries. These events are typically lower consequence events, although homeland security professionals monitor incidents in case patterns emerge that may indicate terrorist activity.

HUMAN-CAUSED EVENTS

Vehicle-Borne Improvised Explosive Devices (VBIED) are bombs used in vehicles, and have been used in the U.S. (e.g., Oklahoma City bombing in 1995, and the World Trade Center bombing in 1993). Damage is a result of the size and type of the explosive and the placement of the vehicle. A VBIED has the potential to kill hundreds and cause physical damage.

Improvised Nuclear Devices (IND) events are classified as low-probability, high-consequence events. While the difficulty in procuring fissile material, transporting it, preparing it properly, and creating a bomb cannot be overstated, the consequences of an IND event are of such significant magnitude as to require national-level planning.

Potential consequences of such an event could include thousands dead, loss of critical infrastructure and key resources, societal disarray, significant economic impacts, and loss of governmental structure and services.

Coordinated Small Groups Assaults, sometimes referred to as "swarm attacks," are those in which an enemy actor has multiple independent groups using small arms and explosives engaging in attacks historically targeting civilian populations, civilian hotels and businesses, and smaller government offices. This characterized the Mumbai, India attacks in 2008.

Coordination may be through the use of cell phones. The small groups coordinate their actions with each other and may also communicate with someone who is not directly involved in the assault activities, but who is monitoring both formal and social media to provide updates on known response activities designed to reduce or stop the event. These units employ military-style small unit tactics, such as fire and maneuver covering fires, combined arms (firearms and explosives).

Historical events include the following:

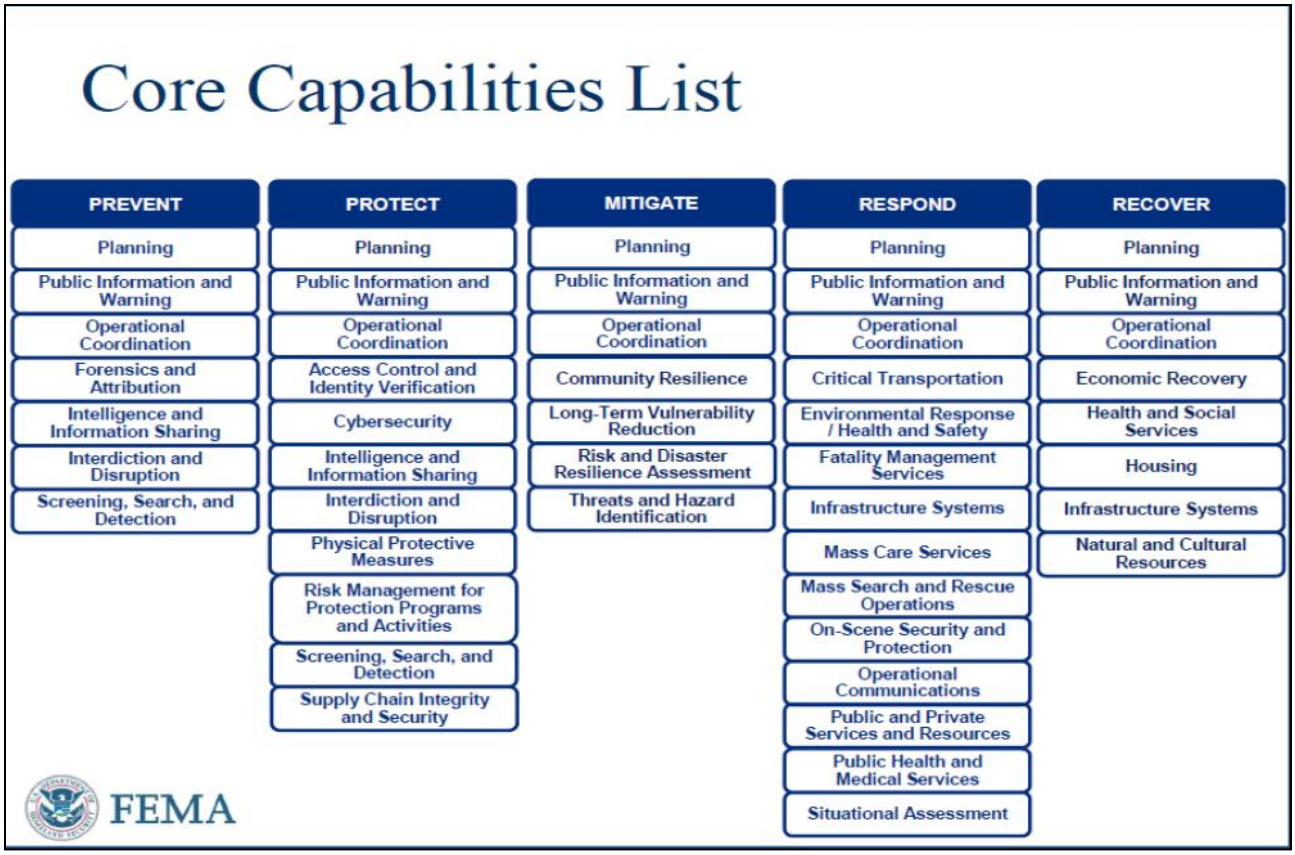
- Madrid, Spain train station attacks (2004)
- Mumbai, India attacks (2008)
- Rawalpindi, Pakistan attack (2009)
- Mumbai, India bombings (2011)

Cyber attacks encompass a wide range of malicious acts carried out in cyberspace. These attacks can include attempts to weaken or destroy critical infrastructure, cyber-enabled crimes, from theft and fraud to child exploitation and drug trafficking, acts of "hacktivism" (i.e., hacking for a politically or socially motivated purpose), data breaches, and espionage. Cyber attacks not only threaten confidential information (e.g., intellectual property, personally identifiable information, classified national security information) but also threaten Virginia's economy, public safety and security, and physical infrastructure operations. Given its nature, a cyber attack can be perpetrated from almost anywhere with access to the internet.

Virginia is particularly at risk for cyber attacks. Northern Virginia is the biggest internet exchange point in the world. The majority of the world's internet traffic travels through the millions of square feet of data centers located in Loudon and Fairfax counties. Within the next five years, this footprint is expected to double. Furthermore, Virginia's proximity to the national capital, and the fact that it is home to many federal agencies and military units, make it a prime target for cyber attacks.

CHAPTER 3 – CORE CAPABILITY TARGETS

FEMA's 2011 National Preparedness Goal identifies 32 core capabilities, activities essential for emergency preparedness.[9]



Core capability targets are aligned with the federal National Preparedness Goal. The C-THIRA core capabilities reside within five mission areas related to emergency management and homeland security: prevention, protection, mitigation, response, and recovery. Three of the core capabilities (planning, public information and warning, and operational coordination) span all five mission areas; others are specific to each mission.

Planning Core Capability Targets

- Implement state, regional, and local plans and annexes, as appropriate for the event, to include the following plans: the COVEOP, Continuity of Operations Plan, recovery, hazard mitigation, emergency medical, incident action plans, and catastrophic plans.
- Monitor the implementation process and document the results, and provide for a review of after-action reports to determine whether changes to the referenced plans need to be made.

[9] FEMA updated the National Preparedness Goal in October 2015, too late to be incorporated into this report. It will be used next year for the 2016 C-THIRA.

- Complete any plan updates within the appropriate planning cycle for the item or by a deadline identified in an after-action report. The event and the timeframes established within the plans will drive the implementation timeline.
- Ensure state level emergency planning initiatives comply with the Emergency Management Accreditation Program (EMAP) Standard.

Public Information and Warning Core Capability Targets

- Share prompt, actionable, and accurate information.
- When events allow, provide information to the public regarding possible impacts and actions to be taken no less than 72 hours prior to the event.
- If the event is dynamic in nature, such as an IND, provide an appropriate, single message to the public with information relevant to the situation no more than one hour post impact. Ensure the message is minimal in nature but comprehensive enough to allow the public to act appropriately.
- During and immediately after an event, expand the various communication platforms to meet required capacities with a strong focus on single messaging.
- Keep appointed/elected officials in the loop via a joint information center. Coordinate state-level elected officials' public outreach.

Operational Coordination Core Capability Targets

- Share prompt, actionable, and accurate information.
- Provide direct links between agencies and entities, as required, to coordinate response and recovery before, during, and after an event.
- Employ a common-use platform providing essential elements of information for appropriate agencies and entities before, during, and after an event.
- Increase trained staff available for functional deployment and increase technical/platform capacity within the next three years.

Forensics and Attribution Core Capability Targets

- In coordination with other applicable entities, provide the ability and capacity to identify and attribute actions, equipment and materials used, and entities involved following a human-caused or technological event.

Intelligence and Information Sharing Core Capability Targets

- In coordination with other applicable partners and entities via the Virginia Fusion Center, share critical information, as appropriate, to reduce the probability of deliberate physical human-caused or cyber-driven activities that are designed to disrupt, harm or otherwise damage people, systems, structures, or infrastructure.
- Expand the provision of training and placement of key staff to facilitate coordination with appropriate agencies to meet increasing demand.

Interdiction and Disruption Core Capability Targets

- In coordination with other applicable partners and entities via the Virginia Fusion Center, act on the shared critical information, as appropriate, to reduce the probability of deliberate physical human-caused or cyber-driven activities.
- Increase technical capacity and staffing to meet shortfalls that currently exist.

Screening, Search, and Detection Core Capability Targets

- In cooperation with other applicable partners and entities and coordinated through the various transportation sectors, screen packages, luggage, etc., with the intent of detecting and identifying goods, materials, components, infected animals, and other items that pose a threat to the Commonwealth, its citizens, or its economy.
- Once identified, interdict and disrupt, as appropriate for the security of the Commonwealth.

Access Control and Identity Verification Core Capability Targets

- In coordination with federal partners, verify identity and control access to emergency operations centers (EOCs) and Joint Field Offices.

Cybersecurity Core Capability Targets

- In coordination with appropriate public and private partners, ensure that the Commonwealth's systems remain secure.
- Provide support and assistance to private sector partners in accordance with existing plans and processes, including the National Infrastructure Protection Plan.

Physical Protective Measures Core Capability Targets

- In coordination with appropriate partners and using existing plans, identify physical vulnerabilities with the intent to prioritize, focus, implement, and maintain resources or activities to reduce or mitigate potential consequences from harm caused by human, technological, or natural events.
- Identify and target high-priority vulnerabilities as measured and identified using risk and consequence analysis.
- Continue to pursue funding of state mitigation activities as identified in the 2013 Hazard Mitigation Plan.

Risk Management for Protection Programs and Activities Core Capability Targets

- Ensure that of operational activities and critical infrastructure sectors have and maintained the appropriate threat, vulnerability, and consequence tools necessary to properly identify and prioritize threats and vulnerabilities as measured by consequences.

Supply Chain Integrity and Security Core Capability Targets

- Secure and increase resiliency for all critical and key transportation nodes within the Commonwealth.
- In coordination with public/private partners, implement programs and processes designed to help secure and make resilient methods of transportation and materials in transit.

Community Resilience Core Capability Targets

- In accordance with existing local, regional, and hazard mitigation plans, take actions as described in the mitigation strategies that will increase the whole community's ability to resist impacts and recover more quickly from an event.
- Ensure that both the state and local hazardous materials plans are updated in a timely fashion to comply with planning cycles.

Long-term Vulnerability Reduction Core Capability Targets

- Using current conditions as a baseline, achieve a measurable decrease in the vulnerability of the entire Commonwealth in the context of infrastructure, economic, historical, and cultural considerations.

Risk and Disaster Resilience Assessment Core Capability Targets

- Ensure that the Commonwealth, its regions, and its localities complete and regularly update contextualized risk assessments and update existing plans in accordance with the timeframes established for the various documents.

Threats and Hazard Identification Core Capability Targets

- In collaboration with the whole community, identify the threat and hazard risks appropriate to the Commonwealth using sound science and historical occurrence.

Critical Transportation Core Capability Targets

- Within 72 hours post-event impact, re-establish transportation corridors for the transportation of required resources to save lives and provide assistance to survivors.

Environmental Response/Health and Safety Core Capability Targets

- Within 12 hours post-event impact or as event appropriate, provide samples and measures of targeted environmental conditions for decision-making purposes.
- Within a timeframe dependent on the nature of the event and in accordance with existing plans, policies, and procedures, make recommendations directly related to health considerations to include (but not to be limited to) boil water notices, shellfish harvesting, and other guidance, as required.

Fatality Management Services Core Capability Targets

- Within 72 hours post-event impact and if the impacted areas have been stabilized, find and handle casualties.
- Set up disaster patient locator services and family reunification processes within 72 hours post-event impact.

Infrastructure Systems Core Capability Targets

- Within 72 hours post-event impact, reestablish critical infrastructure or create workarounds within the affected areas to support ongoing emergency operations, life sustainment, and supply chains, and to support recovery operations.

Mass Care Services Core Capability Targets

- Within 72 hours post-event impact, initiate the provision of mass care and sheltering services.

Mass Search and Rescue Operations Core Capability Targets

- Within 24 hours of an officially-declared state emergency or within 24 hours of event stabilization, deploy appropriate resources to assist public/private partner operations in event-affected areas.

On-scene Security and Protection Core Capability Targets

- In coordination with federal partners, establish on-scene security and protection at all targeted locations within 24 hours post-event impact.

Operational Communications Core Capability Targets

- In coordination with public and private partners, maintain communication.
- When operational communications are negatively impacted by an event, depending on the nature and extent of damage, restore the communications within 24 hours.
- Have temporary measures to improve functionality in place within six hours of notification of a systemic failure.

Public and Private Services and Resources Core Capability Targets

- As driven by the event, activate appropriate public/private memoranda of understanding and existing contracts in advance of the event to aid in meeting the pre-identified needs of the impacted areas.
- Implement existing contracts when the event is spontaneous in nature and an emergency declaration is made by the Governor.
- Per the *Code of Virginia*, if an event occurs that requires a vendor that does not have a contract in place, the normal procurement process may be bypassed.

Public Health and Medical Services Core Capability Targets

- As driven by the event and in accordance with existing plans and processes, track the event, identify appropriate actions, and activate or request the needed resources.
- Once resources are en route and, when necessary, establish points of dispensing within the impacted health districts.

Situational Assessment Core Capability Targets

- Monitor state conditions 24/7.
- Gather information and disperse to decision makers in a timely manner appropriate to the event and based on local sit-rep reports, media, and other communication resources.

Economic Recovery Core Capability Targets

- In accordance with existing plans and processes, act to identify the economic impacts from an event and, where possible, identify strengths, weaknesses, opportunities, and threats to assist in identifying appropriate actions to take to restore the economic base of the impacted area.
- Depending on impacts, identify economic recovery actions designed to return the affected area to sustainability for the short-term (up to six months), mid-term (six months to two years) and long-term (more than two years).

Health and Social Services Core Capability Targets

- Perform an assessment of impacts starting immediately after the event. Depending on the extent of the event, the assessment timeframe may range from 72 hours to several weeks.
- Using the information gathered in the early stages of the assessment and in accordance with existing plans and processes, the Commonwealth will construct a preliminary schedule of actions and activities necessary to initiate actions for a comprehensive recovery.

Housing Core Capability Targets

- Depending on the extent and nature of the event, conduct an initial assessment of housing and placement needs within three to fourteen days after operational conditions have stabilized.
- Once the assessment has been completed, start the process of identifying resources for temporary housing.

Natural and Cultural Resources Core Capability Targets

- Depending on the extent and nature of the event and resources available, the Commonwealth will work to stabilize natural resource conditions.
- Identification of opportunities for the preservation of cultural resources is an ongoing process. Post-event impact, this identification process provides a baseline measure of what needs to be done (where possible) to restore and mitigate the impacted resource.

CHAPTER 4 - LOCAL RESOURCES

This year's process for gathering the information needed to update the resources required to achieve capability targets included identifying data from localities.

This was accomplished by education and outreach to local emergency managers to explain the C-THIRA process and its importance. The 2015 outreach and education process started in March at the Virginia Emergency Management Symposium held at the Hampton Roads Convention Center. This was followed by multiple, one-on-one and group meetings and ended in September with final webinars. In all cases, the localities acknowledged the importance of the C-THIRA to identify capability gaps and prioritize needs.

Inputs used for this year's C-THIRA can be placed into four categories:

- Self-reporting
- Training
- Current mitigation activities
- Local C-THIRA submissions and other direct inputs

SELF-REPORTING INPUTS

The 2015 Local Capability Assessment for Readiness (LCAR) reports were used to identify the resource strengths and weaknesses of localities. Each year, jurisdictions are asked to complete a self-evaluation and respond to specific questions that are linked to core capabilities or mission areas. The LCAR questions were developed through a collaborative process by a steering committee that included representation from numerous specialties. Since the first survey's development in 2010, the questions have been reviewed annually.

The LCAR contains questions about 10 emergency management areas, eight of which are directly connected to specific core capabilities and/or critical mission areas. Within a section, each response to each question is assigned a point value. The questions' point values, when all answered positively, add up to 100. A score of 100 is considered perfect. The state average is then calculated by dividing the total combined section score by the number of jurisdictions that reported for the year. The below details the score results from this year's LCAR.

- **Mitigation**: Localities have evaluated themselves at an average of 75 percent across the Commonwealth. Specific components of the questionnaire discuss mitigation planning, mitigation activities to deal with repetitively-flooded properties, and participation in national mitigation-based programs. Mitigation is an overall mission area within the THIRA and C-THIRA. This is a self-reported six percent capability improvement from last year.

- **Resource Management and Logistics**: Tied to the core capability of Operational Coordination, localities self-evaluated with an average score of 73 percent. Specific questions within the LCAR discuss mutual aid, existing contracts, volunteer coordination, and donations management. This is a self-reported three percent capability improvement from last year.

- **Planning**: An identified core capability in all mission critical areas, localities self-evaluated at an average score of 88 percent across the Commonwealth. Specific questions within the LCAR discuss emergency operations planning, continuity of operations planning, access and functional needs, mass care and sheltering, and outreach. This is a self-reported two percent capability decrease from last year.

- **Direction, Control, and Coordination**: Directly tied to the core capability of Operational Coordination, localities self-scored at an average of 84 percent. Specific questions within this category referred to EOC activation, mobile command posts, and the National Incident Management System (NIMS). This is a self-reported four percent capability decrease from last year.

- **Communications and Warning**: Directly tied to the core capabilities of Operational Communications and Public Information and Warning, localities self-scored at an average of 85 percent. Specific LCAR questions referenced interoperability, communication procedures, backup systems, and Reverse 911. This is a self-reported capability decrease of one percent from last year.

- **Operations**: Localities self-scored with an average of 86 percent across the Commonwealth. Specific questions that can be tied to core capabilities referred to Planning, Search and Rescue, and Operational Communications. There was no change in the self-reported capability level from last year.

- **Training**: Directly referenced in identifying needs and resources for improved performance or to meet core capability targets, localities self-scored at an average of 77 percent. Questions within this section reference NIMS, hazardous materials, and the need for a locality to develop an annual training needs assessment. This is a self-reported one percent capability increase from last year.

- **Crisis Communication, Public Education, and Information**: Directly tied to the core capability of Public Information and Warning across all mission areas, localities self-scored at an average of 72 percent. Specific questions referenced public outreach, Community Emergency Response Teams, communication with special needs populations, and public information officers. This is a self-reported two percent capability increase from last year.

TRAINING INPUTS

Localities' needs for additional core capability training were identified by cross-referencing the LCAR inputs with the type of training requests VDEM's Training, Education and Exercises Division (TEED) received. Records from TEED show the following as the top core capabilities exercised this year through 153 training opportunities. The associated mission area (from FEMA's National Preparedness Goal) is also listed.

Core Capability	Mission Area(s)	Training Opportunities
Operational Coordination	Across all	87
Community Resilience	Resilience, Mitigation	18
Operational Communication	Across all	11
Public Information/Warning	Across all	9
Mass Care Services	Response	8
Planning	Across all	6
Economic Recovery	Recovery	3
Supply Chain Integrity	Protection	3
Threats and Hazard Identification	Mitigation	2
Critical Transportation	Response	2
Natural and Cultural Resources	Recovery	1
Mass Fatality Services	Response	1
Situational Assessment	Response	1
Environmental Response	Recovery	1

As these training opportunities were offered in direct response to requests from localities, it indicates the core capabilities the jurisdictions targeted and prioritized for improvement or exercise. While this does not indicate the functional level of resource requirements necessary to achieve the core capability targets through the use of community assets, combining this information with the LCAR self-assessments may provide insight into the areas where localities can improve.

CURRENT MITIGATION ACTIVITIES

All jurisdictions participate in one of the 22 regional mitigation plans facilitated by the planning district commissions. This is a change from last year when not all jurisdictions were participating in the regional mitigation planning process. A required component of this plan is to identify strategies and opportunities that will assist the community in reducing its risk and increasing its resilience. Mitigation opportunities have been self-identified by every locality that has a hazard mitigation plan.

Mitigation is cost effective. FEMA has demonstrated that for every dollar spent on mitigation, there is an average of four-dollar savings against future damages. Estimates of mitigation resource requirements are based on a review and discussion of mitigation strategies, resulting in agreed-upon local, regional, and state priorities. Once this is accomplished, resources can be identified for those mitigation opportunities.

Currently, the Commonwealth has almost $46 million in open mitigation projects. Based on FEMA valuation, this represents almost $184 million in future loss and damage avoidance. Most mitigation projects are located in coastal communities and are focused on reducing impacts from flooding events. In August, the Commonwealth applied for over $5 million for additional mitigation projects using FEMA Flood Mitigation Assistance and Pre-Disaster Mitigation grant opportunities.

LOCAL INPUTS

Local input includes information gathered from March through September during one-on-one meetings, group meetings, questions/answers following webinar presentations, and submitted documents.

For this year's C-THIRA, localities were asked to concentrate on evaluating their current status and desired capacity considerations. This was to be done for each of their core capability responses in the critical mission areas traditionally associated with local emergency management. Those mission areas are mitigation, response, and recovery. Under each mission area in the tables that follow, the top and repeated local inputs are included.

Mitigation Mission Area Core Capabilities

Core Capability	Current Status	Desired Capacity Considerations
Planning	Staffing and resources insufficient	Additional local staff Additional planning district commission staff
Public Information and Warning	Inability to reach all residents	Increased social media capacity
Operational Coordination	Limited staffing for sustained events	Incident Management Assistance Teams
Community Resilience	Inability to address infrastructure needs	Ability to identify systems and cascading impacts Additional contracts in place
Long-term Vulnerability Reduction	Inability to quantify means to reduce vulnerabilities without technical assistance	Ability to quantify means to reduce vulnerabilities Planning district commission staff to assist in coordinating and managing vulnerability reduction/activities
Risk and Disaster Resilience Assessment	Inability to quantify as no baseline is established and technical assistance is lacking	Technical assistance
Threat and Hazard Identification	Performed at both the local and regional levels	Current capacity acceptable

Response Mission Area Core Capabilities

Core Capability	Current Status	Desired Capacity Considerations
Planning	Staffing and resources insufficient	Additional local staff Additional PDC staff
Public Information and Warning	Single-source power dependent systems	Backup and legacy systems Backup power sources
Operational Coordination	Staffing insufficient for sustained activities	IMAT teams
Critical Transportation	Capacity to clear roads insufficient	Additional contracts in place
Environmental Response/Health and Safety	No responses for this core capability	
Fatality Management Services	No responses for this core capability	
Infrastructure Systems	Locality capacity insufficient to address this	Additional contracts in place Additional mutual aid agreements Cyber vulnerability analysis
Mass Care Services	Local shelter capacity at desired levels	Back-up power for existing shelters Strengthening of supply chain and distribution
Mass Search and Rescue	In most responses, no local capacity	No changes
Operational Communications	Operational communications sufficient unless catastrophically impacted	No changes
Public and Private Services and Resources	Inability to respond to infrastructure or supply chain failures	Additional contracts and mutual aid agreements in place
Public Health and Medical Services	Responses highly variable based on overall population density and economic condition *As a general observation, rural jurisdictions had a lower overall capacity than more densely populated, urban/suburban, jurisdictions.*	Road clearing priority given to public health services Access to additional transportation resources

Situational Assessment	Insufficient capacity during the event	Additional capacity in:
		• Verifying information
		• Understanding/evaluating
		  ○ Weather conditions
		  ○ Cascading impacts
		  ○ Physical social conditions
		  ○ Social awareness/attitudes

Recovery Mission Area Core Capabilities

Core Capability	Current Status	Desired Capacity Considerations
Planning	Staffing and resources insufficient	Additional local staff Additional PDC staff
Public Information and Warning	Single-source power dependent systems	Backup and legacy systems and power sources
	Social media communication staff insufficient	Increased social media capacity
Operational Coordination	Staffing insufficient for sustained activities	Disaster assistance teams
Economic Recovery	Insufficient staffing and resources	No additional local capacity *Note: Perceived in general to be a state function, post-event.*
Health and Social Services	Insufficient capacity for behavioral health issues associated with events	No additional local capacity *Note: Perceived in general to be available from the state, post-event.*
Housing	Insufficient local staffing and resources	No additional local capacity *Note: Indicators were that the localities expected this to be addressed by non-profits and state resources.*
Infrastructure Systems	Locality capacity insufficient to address this	Additional contracts in place Additional mutual aid agreements with co-ops Cyber vulnerability analysis
Natural and Cultural Resources	Minimal response from localities	*From those who responded, the presumption was that the state and federal resources would address this area.*

CHAPTER 5 – STATE OF PREPAREDNESS ACTIVITIES

Information that assists in this process is captured in the 2014 THIRA and State Preparedness Report (SPR), state coordinator's briefings with local emergency managers, after-action reports, and event logistics requests made through the Virginia Emergency Operations Center and documented in WebEOC.[10]

The current assessment methodology includes surveys to identify if the Commonwealth is providing training that is consistent with identified needs. The primary tools used by VDEM's Training, Education, and Exercise Division for information gathering are listed below.

Improvement Planning Workshops (IPW) per Homeland Security Exercise and Evaluation Program

- IPWs are framed by the THIRA core capabilities and any specialized locality inputs needed, based on specifics for that area.
- IPWs are conducted in each VDEM region (as well as some sub-regions) on an annual basis.
- IPWs may identify any threats and/or hazards the localities within that region want to include that are not already on the state THIRA prioritized list.
- IPW information is cross-referenced against exercise and real-world event after-action reports for validation measures.
- VDEM's approach is to identify training to build capability, and then exercise to test newly improved capability.
- All inputs from each region, plus inputs from other stakeholders such as other state agencies and VERT agencies, feed into the annual State Training and Exercise Plan.

Training Assessment Survey

- This is done biannually. It focuses on the level of satisfaction with current offerings, areas not currently meeting needs, marketing strategy, and enrollment barriers to identify training and exercise shortfalls. Results are reviewed and an improvement planning session is conducted to identify how processes and offerings can be enhanced to meet identified needs.

Post-course Surveys

- Each course has a survey associated with it that assesses customer satisfaction with the course material and course logistics, and requests suggestions for improvement. Results are compiled monthly with corrections applied as necessary.

Other Ad Hoc Surveys

- These are conducted when a determination is made that feedback on a specific program element or strategy is needed (e.g., post-exercise or event).

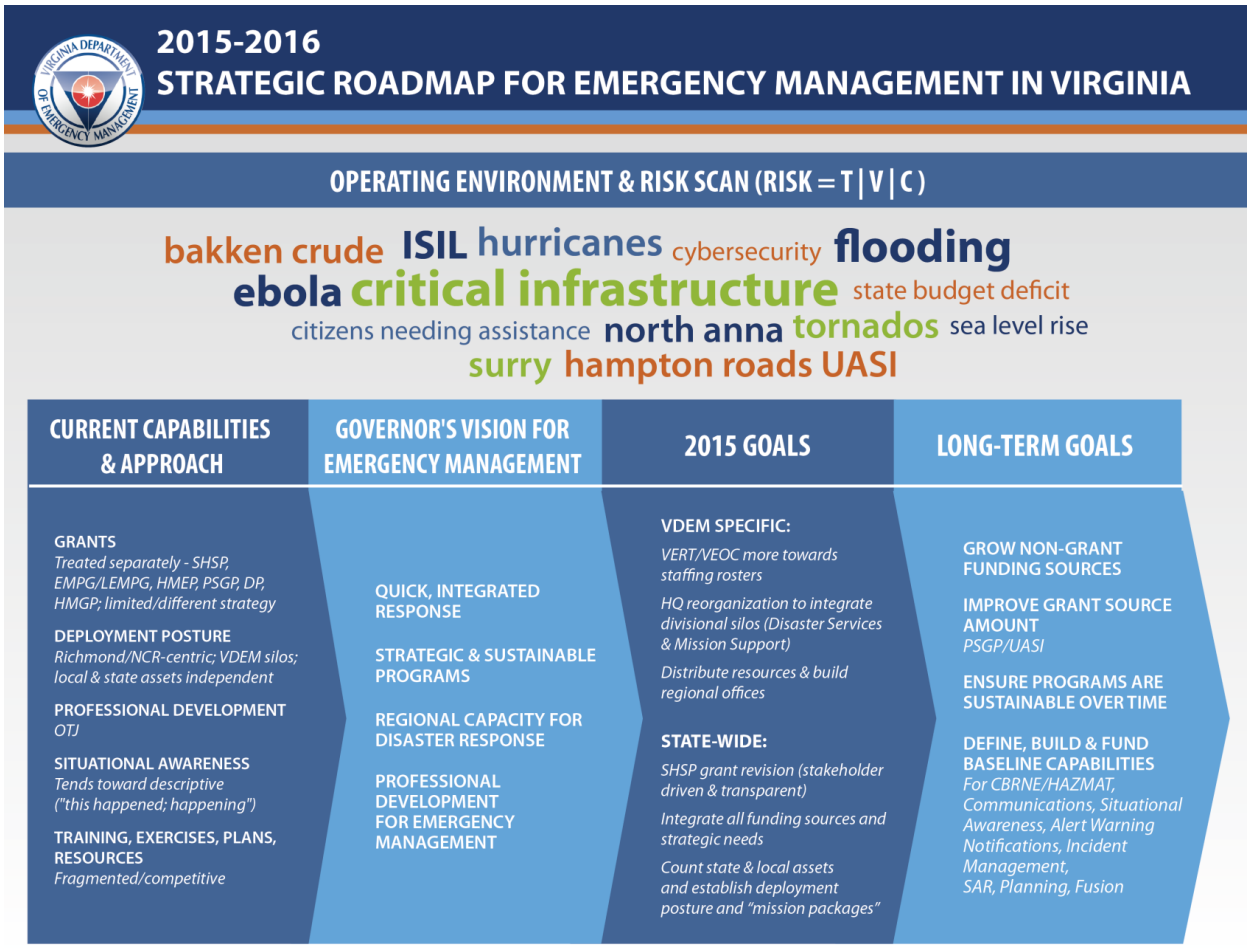
[10] WebEOC is a statewide communications system for sharing information during emergencies, and is used to collect after action information.

CHAPTER 6 – STRATEGIC APPROACH TO PREPAREDNESS

The 2014 C-THIRA completed the initial step towards improving future preparedness. It was the beginning of a roadmap that:

- Identified the threats and hazards of concern.
- Contextualized these threats and hazards.
- Articulated measureable and achievable targets for core capabilities.
- Identified information sources and gaps.
- Provided a process for gap analysis.
- Recommended standardization and iteration.
- Understood that conditions change and flexibility is critical.
- Was consistent with the National Preparedness Goal.
- Provided specific information on suggested actions for future C-THIRAs.

In 2015, VDEM developed a strategic roadmap for emergency management in the Commonwealth based on the current threat and hazard environment. This roadmap was developed in partnership with local emergency managers and based on the input of several data sources including the 2014 C-THIRA.



The strategic roadmap outlines Virginia's approach to create a sustainable emergency management program in an ever-changing threat environment. Included in the roadmap is the Governor's vision for emergency management, which is based on a shared commitment to improving our ability to prevent, protect, prepare for, mitigate, respond to, and recover from all hazards. This starts by enhancing collaboration between local and state emergency managers, first responders, federal, private, and non-profit partners, and our citizens. The highlights of the roadmap include building regional capacity, enhancing professional development opportunities, providing quick, integrated response, and developing strategic and sustainable programs.

CONCLUSION

The emergency management and homeland security environment remains dynamic. In facing this environment, the Commonwealth is engaged in a wide variety of activities to prepare for both persistent and evolving threats and hazards. In 2015, we saw emergent global hazards from Ebola Virus Disease to avian flu, along with local hazards from severe winter storms and hurricanes. The terrorist threat continues to evolve, and Virginia remains an attractive target as it is home to the Pentagon and the CIA (both previous targets), along with many federal and military facilities and personnel. The emerging challenge of cybersecurity requires both government and private sector involvement, beyond any single agency or organization. The Virginia Cyber Security Commission is one example of all sectors of society coming together in collaboration and coordination. Increasingly, preparing for and responding to these events requires a shared and coordinated effort across state agencies and secretariats, and outside of government.

Over the past eight years, the reduction in federal grant funds for homeland security and emergency management programs in Virginia—from a high of $64 million in 2008 to only $17 million in 2015—means that we all must face these threats and hazards with new thinking and new approaches that maximize the use of limited federal and state tax dollars for planning, organizing, equipping, training, and exercising. This nearly 70 percent reduction means that sustaining the programs built since 9/11 will be an increasing challenge. The state's budget crisis in 2014 –2015 also had a negative impact on public safety agencies, which saw budget reductions of six and seven percent in successive years. This requires engagement with local response partners to a degree not previously seen.

The Public Safety and Homeland Security Secretariat has initiated several changes to improve Virginia's readiness in the face of this environment. In 2015, for example, members from local and state law enforcement, fire services, EMS, emergency management, and other groups were brought together to reinvent how federal homeland security grants allocations would be made to localities for the purchase of equipment and the support of various homeland security and emergency programs. The result was a peer-review process that was open and transparent. This is one example of the ongoing effort to ensure our Commonwealth's readiness and resilience in the face of the threats and hazards described in this report.