

Duplin County Local Emergency Planning Committee

Assessment of Hazard Vulnerability

This document summarizes the Duplin County Local Emergency Planning Committee's vested interest in identifying and planning for hazards within the jurisdiction. An overview of this project is provided along with a description of the assessment process and a summary of the discussion and outcomes from the participant's consensus.

Project Overview

The Duplin County Local Emergency Planning Committee (LEPC) initiated this project to provide a systematic approach to recognizing hazards that may affect demand for services or its ability to provide those services. This is described as the Hazard Vulnerability Assessment (HVA). The risks associated with each hazard are analyzed to prioritize planning, mitigation, response and recovery activities. The HVA serves as a needs assessment for the Emergency Management program. The events and conditions that threaten Duplin County's ability provide service to the communities and citizens should be identified through this research and properly planned for. Each entity should regularly conduct an HVA focused on the potential impacts to that facility's operations. This project is an initial step in understanding the events and circumstances that may reduce the capability and capacity of Duplin County.

The project facilitation began by gathering and analyzing information in order to understand the vulnerabilities. The initial step included Duplin County Emergency Management personnel gathering agency-specific and facility-specific information by reviewing HVAs from partner agencies.

The events impacting Duplin County and partner agencies were compiled so that each could be analyzed during the regularly scheduled LEPC meeting on November 16, 2017.

This meeting was structured so that the compiled facility and partner agency vulnerabilities could be reviewed and validated. The vulnerabilities were analyzed to determine commonality and root cause.

Many of the identified partner vulnerabilities were identified as having potential to contribute to an impact to County capability. Participants examined the relationship between partner and regional vulnerabilities and differentiated regional hazards. From this study, a list of hazards that are most probable, were perceived to have the highest impact and demonstrated the lowest level of mitigation and preparedness were identified.

To illustrate the analysis, consider a hurricane, tornado, a mass casualty event from a hazardous materials release, and an act of terrorism in a public place that injures a large number of people. Weather events have a similar impact on capability and

preparedness. There are challenges presented by each weather event that may vary according to the size of the weather event or other variables.

In this report the conditions creating vulnerability are identified and the mitigation strategies listed.

Identified Hazards

The partner HVAs reviewed prior to the meeting identified an extensive list of events that may impact Duplin County. Within that list each partner identified the events that present a higher relative risk to their organization. Prior to the meeting the events that were most commonly identified as presenting a high relative risk to a facility were compiled. The meeting participants validated the list of commonly high ranked partner risks.

Events commonly identified as high risk by facilities:

- Hurricane
- External flood
- Severe Hazardous Materials Incidents
- Bioterrorism
- Civil disturbance
- Ice storm
- Labor shortage
- Transportation failure
- Infectious disease
- Cyber attack
- HVAC failure
- Internal flood
- Snowfall more than one day
- Radiological exposure
- Active shooter
- Mass casualty
- Chemical exposure
- Communications failure
- Medical Gas failure
- Severe thunderstorm
- Electrical failure

Among facility vulnerabilities, the following were most frequently identified as high risk:

- Hurricane
- Tornado
- Ice Storm
- Mass Casualty Incident (MCI)
- Electrical/Generator failure
- Communications failure/IT failure
- Hazardous Materials

Participants validated a list of events that are likely to create an impact to the County preparedness capability. Those events are:

- Special needs population
- High risk infectious disease
- Staffing shortage
- Storms and weather
- IT events
- Communication
- Hazardous Materials Response capability

Vulnerabilities

The meeting participants considered the natural and man-made events that create a high risk, as well as those events that may occur within the region and create an impact to preparedness capability.

From the meeting discussion the following three challenges were determined to contribute to the vulnerability during almost every natural or man-made impact. No order of priority or relative risk was identified among the three.

Communication and Coordination

The perceived vulnerability of “coordination and planning” is based on participant analysis of widespread impacts. A widespread impact generates a variety of challenges for partner agencies, healthcare providers, emergency managers, and emergency responders. The challenges presented by an impact will create unique problems for each facility and agency. The response and recovery capability and capacity of each facility and agency differs. The ability to assess needs and prioritize response actions in a coordinated manner was identified.

When the partner's ability to communicate and coordinate is impacted the County's capability is stressed before, during, and while recovering from any event, natural or manmade. The factors that may contribute to communications or coordination challenges were identified and defined as:

- Communications system – availability, interoperability, and functionality of the tools, resources, systems, and devices that allow responders and emergency managers to communicate and coordinate. Multiple operating radio systems in the county public safety sector makes maintaining two systems during a time of disaster unfeasible with the previously identified lack of adequate staffing.
- Communication – possessing tools and resources is only part of the communications challenge. The users and partner agencies need to know how to leverage the communications resources, be willing to do so, and share information efficiently during any event with all parties who may need to be recipients of information. The use of “10 codes” and other jargon are still being used in the public safety and partner agencies communications. According to national standards for interoperable communications, this should be eliminated. Standardized communications procedures should be in place and all entity specific jargon should be discarded.
- Accessibility – there are challenges to coordination and support based on roads and transportation assets (Ingress/Egress). During many events the geographic distance separating those impacted and support for those impacted is compounded by infrastructure impact such as impassable roads due to natural hazards. Additionally, there is a limited number of assets within the region capable of moving people with any type of specialized medical transport need

or other access or functional need. Accessibility includes road infrastructure, geographic distance, and transportation assets.

- Public Messaging – it is vital that information be communicated concisely, timely, and in a coordinated manner during an event that impacts the Duplin County. Messages before and during an event may not be coordinated among all involved agencies if there are no plans and processes to do so. Even if coordinated, there may not be a mechanism to disseminate information to those realizing the impact– i.e. families of citizens being evacuated or consumers of services that may become unavailable. All entities should have proper procedure, using the chain of command to contact emergency management personnel. Emergency Management personnel have the ability to use reverse 911 calling systems to alert the public in the time of an emergency or disaster situation.

Workforce

There is a limited number of staff in every function. All agencies are trying to limit costs and be efficient with staff. When an event occurs that requires additional staff there is not a pool of available personnel to support Duplin County and partner agencies.

For illustration purposes, vulnerability is based largely on the limited capacity within the County to support partner agencies during a widespread event. If one facility is impacted there are sufficient emergency responders to mitigate the emergency. If an event impacts transportation routes, preventing staff from getting to work, then multiple facilities could be vulnerable. If an event occurs requiring responders to be expanded at several facilities simultaneously the system could not handle the increased need.

The analysis of workforce included defining the following factors that influence the impact to the workforce:

- Number – there is a limited number of people who are employed at each agency. Outside of each agency there is a limited number of qualified or credentialed people who can be activated to support impacted partners.
- Age – the emergency responders in this region are of an older median age. In many communities there is not a younger workforce that is apprenticing to replace those that retire.
- Turnover – there is a high rate of turnover among volunteers.
- Specialty – Emergency response requires personnel with specialized training, skills, experience, and certification. Regionally, and in many cases statewide, there is a limited number of personnel with the credentials to support “specialty” roles.

Mitigation Strategies

Each vulnerability was analyzed to determine a framework of strategies that, if implemented, would mitigate the impact to Duplin County’s capability from the vulnerability.

Communication and Coordination

The summary of mitigation for coordination and planning is to better utilize or enhance plans. The participants indicated that plans should be developed to determine coordination, participating agencies need to be educated about the plan, and the process exercised. The intent is that plans should describe how information flows within the region so that agencies have a mutual understanding of actions and communications.

- Operationalize plans – plans or concepts for coordination and communication exist, however they may not have a clear process for becoming operational or being applied during an actual event.
- Verification of contracts and MOUs to reduce conflict/competition – every partner agency has agreements with suppliers, vendors, and other facilities for support during emergencies and major events. The existence and status of agreements needs to be verified to ensure appropriate agreements are in place and up to date. Facilities and agencies need to share basic details about agreements to determine if there is excessive reliance on one vendor or resource.
- Mutual Aid Agreements– partner agencies are willing to assist one another but agreements need to be in place to address issues such as reimbursement, communications, and liability.
- Public messaging – All entities should have proper procedures, using the chain of command, to contact emergency management personnel to relay pertinent information regarding the state of their agency. Information can then be relayed to the public via the reverse 911 calling system.

Workforce

- Conduct an agency overextension assessment to determine what areas of the workforce are most overextended. Agencies should identify consistent shortages in staffing for certain types of positions. Understanding these vulnerabilities will provide the agency with planning assumptions that allow planners to prepare for the expected staffing shortages or impact to services.

Next Steps

LEPC partners will continue to provide feedback and content to the project. As the vulnerabilities and mitigation strategies are further defined, the LEPC partners will begin to develop tactics to implement the mitigation strategies.

HAZARD AND VULNERABILITY ASSESSMENT TOOL NATURALLY OCCURRING EVENTS



EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)			PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT				
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Community/ Mutual Aid staff and supplies</i>	<i>Relative threat*</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Hurricane	2	2	2	2	2	2	2	44%
Tornado	2	3	3	3	2	3	2	59%
Severe Thunderstorm	3	1	1	2	1	1	3	50%
Snow Fall	1	2	1	2	2	2	2	20%
Blizzard	1	3	2	3	3	1	3	28%
Ice Storm	2	1	1	3	2	1	2	37%
Earthquake	1	3	3	3	3	1	2	28%
Tidal Wave	0	0	0	0	0	0	0	0%
Temperature Extremes	2	1	1	1	1	1	1	22%
Drought	2	1	2	3	3	2	1	44%
Flood, External	2	2	2	2	1	1	3	41%
Wild Fire	1	2	3	3	3	2	2	28%
Landslide	1	0	0	0	3	0	3	11%
Dam Inundation	1	1	1	1	3	2	3	20%
Volcano	0	0	0	0	0	0	0	0%
Epidemic	1	3	3	1	2	1	2	22%
AVERAGE SCORE	1.38	1.56	1.56	1.81	1.94	1.25	1.94	26%

*Threat increases with percentage.

RISK = PROBABILITY * SEVERITY
0.26 0.46 0.56

HAZARD AND VULNERABILITY ASSESSMENT TOOL TECHNOLOGIC EVENTS



EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)			PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT				
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Community/ Mutual Aid staff and supplies</i>	<i>Relative threat*</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Electrical Failure	2	1	1	3	2	1	2	37%
Generator Failure	2	1	1	2	1	1	2	30%
Transportation Failure	2	1	1	2	3	1	2	37%
Fuel Shortage	1	1	2	3	2	3	2	24%
Natural Gas Failure	1	2	1	1	3	1	2	19%
Water Failure	1	1	1	1	3	3	2	20%
Sewer Failure	1	2	2	1	3	2	2	22%
Steam Failure	0	0	0	0	0	0	0	0%
Fire Alarm Failure	1	1	1	1	1	1	1	11%
Communications Failure	2	1	1	1	2	3	2	37%
Medical Gas Failure	1	3	0	1	2	1	2	17%
Medical Vacuum Failure	1	3	1	3	2	1	2	22%
HVAC Failure	3	3	1	2	2	1	1	56%
Information Systems Failure	2	0	0	2	3	3	2	37%
Fire, Internal	1	3	3	3	1	2	1	24%
Flood, Internal	1	1	2	2	1	1	1	15%
Hazmat Exposure, Internal	1	1	1	1	2	1	1	13%
Supply Shortage	1	2	1	3	2	3	2	24%
Structural Damage	1	2	3	2	1	1	1	19%
AVERAGE SCORE	1.32	1.53	1.21	1.79	1.89	1.58	1.58	23%

*Threat increases with percentage.

RISK = PROBABILITY * SEVERITY
0.23 0.44 0.53

HAZARD AND VULNERABILITY ASSESSMENT TOOL HUMAN RELATED EVENTS



EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPAREDNESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Community/ Mutual Aid staff and supplies</i>	<i>Relative threat*</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Mass Casualty Incident (trauma)	2	3	2	2	3	2	3	56%
Mass Casualty Incident (medical/infectious)	2	3	1	2	2	3	3	52%
Terrorism, Biological	1	3	1	1	2	2	3	22%
VIP Situation	1	1	1	1	2	3	3	20%
Infant Abduction	2	1	1	0	3	3	3	41%
Hostage Situation	2	3	1	2	2	3	3	52%
Civil Disturbance	2	2	2	2	2	2	3	48%
Labor Action	1	1	1	3	3	3	3	26%
Forensic Admission	1	1	0	0	2	1	3	13%
Bomb Threat	3	1	1	2	3	2	3	67%
AVERAGE	1.70	1.90	1.10	1.50	2.40	2.40	3.00	39%

*Threat increases with percentage.

RISK = PROBABILITY * SEVERITY		
0.39	0.57	0.68



**HAZARD AND VULNERABILITY ASSESSMENT TOOL
EVENTS INVOLVING HAZARDOUS MATERIALS**

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)			PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT				
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Community/ Mutual Aid staff and supplies</i>	<i>Relative threat*</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 - 100%
Mass Casualty Hazmat Incident <i>(From historic events at your MC with >= 5 victims)</i>	2	2	1	2	1	3	1	37%
Small Casualty Hazmat Incident <i>(From historic events at your MC with < 5 victims)</i>	2	2	1	2	1	2	2	37%
Chemical Exposure, External	1	2	1	3	2	3	1	22%
Small-Medium Sized Internal Spill	2	1	2	1	2	1	3	37%
Large Internal Spill	1	2	1	2	1	3	3	22%
Terrorism, Chemical	1	2	1	1	3	3	1	20%
Radiologic Exposure, Internal	1	3	3	3	1	2	2	26%
Radiologic Exposure, External	1	2	1	2	1	2	2	19%
Terrorism, Radiologic	1	3	1	1	3	2	1	20%
AVERAGE	1.33	2.11	1.33	1.89	1.67	2.33	1.78	27%

*Threat increases with percentage.

RISK = PROBABILITY * SEVERITY		
0.27	0.44	0.62