Critical Infrastructure Assessment

Everyday the products and services that support our standard of living flow, almost seamlessly, to and from our homes, communities, and government. Making this possible are the systems and networks (the roads, airports, power plants, communication facilities, etc.) that make up the critical infrastructure of our society.

This analysis focuses on determining the vulnerability of key individual facilities, lifelines, or resources within the county. It is important to protect critical infrastructure to ensure that service interruption is kept to a minimum, reduced, or eliminated because many of these facilities play a central role in disaster response and recovery. Since it is not usually feasible to conduct such an analysis for every structure in a community, focus should be placed on identifying the categories of structures that are considered "critical" for purposes of conducting individual facility assessments. The objective of this assessment is to identify the vulnerability of critical infrastructure so as to take the necessary actions to deter or mitigate potential hazards[1].

Critical Infrastructure Inventory

This inventory consists of a database of facilities considered to be critical. The information collected identifies the facility type and location. It is important to collect accurate information about these facilities and their locations as this data will be essential for GIS mapping and completing the individual facility assessments in the next step of this analysis.

Information collected for each critical facility includes, but is not limited to the following:
- Facility Name
- Facility Type
- Facility Point of Contact (POC)
- Physical Street Address
- Municipality
- Latitude and Longitude
- Elevation
- Tax Parcel data
- Flood Insurance

Identify Critical Infrastructure Categories

The completion of a critical facilities analysis is one of the most important elements in a county-wide/community-wide vulnerability assessment. The first step in this analysis is to determine which facilities are considered critical.

---

[1] NOAA Coastal Services Center**,** National Oceanic and Atmospheric Administration*. Risk and Vulnerability Assessment Tool Risk and Vulnerability Assessment Steps Critical Facilities Analysis Extended Discussion,* **http://www.csc.noaa.gov/rvat/criticalEdd.html**

The NOAA model was utilized by the Delta Planning Team to develop the Infrastructure Assessment Tool. Delta tailored the NOAA model and further expanded upon it in order to meet Huntingdon County's needs.

Per the National Infrastructure Protection Plan (Department of Homeland Security, 2006), critical infrastructure categories include:
- Agriculture
- Banking and Finance
- Chemical
- Commercial Facilities
- Dams
- Defense
- Drinking Water
- Waste Water Treatment
- Emergency Services
- Energy
- Government Facilities
- Information Technology
- National Monuments and Icons
- Nuclear Reactors and Waste
- Postal and Shipping
- Public Health and Healthcare
- Telecommunications
- Transportation System

Vulnerability Assessment

For each critical facility that has been prioritized, an individual assessment addressing the location of the facility and the potential impacts of each hazard was completed. The result is a systematic assessment of the vulnerability of critical lifelines or key resources to various hazard impacts. Mitigation projects for critical facilities can now be identified and prioritized.

To determine which hazards pose the greatest threat, each of the sections below will be added together for each individual hazard. The result will be the Critical Infrastructure Vulnerability Score[2].

Section 1: Risk

Risk areas identify geographically those areas most likely to be affected by a given hazard. These scores are based on the degree of potential damage. For example, a higher risk score would be assigned to a facility that is below the base flood elevation (BFE) located in a 100-year floodplain versus an area that is in the 500-year floodplain. Enter the scores for each hazard risk area wherein the facility is located.

Section 2: Damage History

---

[2] NOAA Coastal Services Center, National Oceanic and Atmospheric Administration. *Risk and Vulnerability Assessment Tool Risk and Vulnerability Assessment Steps Critical Facilities Analysis Extended Discussion,* **http://www.csc.noaa.gov/rvat/criticalEdd.html**

Based on historical records or personal accounts, any known previous damages caused specifically by each of the hazards were identified. This should help estimate vulnerability based on past damage experience. The scoring range in this category is higher than that in the structural and operational categories described below because the determination is less subjective and serves as direct proof of vulnerability. If no damages have historically occurred, it implies that the level of vulnerability is reduced or has already been mitigated. Keep in mind however, that a damage-free past does not guarantee a damage-free future. This score ranges from "0" for no damage history to "6" for major or repetitive loss (RL).

- minor — equal to or less than 25 percent of the structure's fair market value
- moderate — from 26 to 49 percent of the structure's fair market value
- major — 50 percent of or greater than the structure's fair market value

Section 3: Structural Vulnerability

This section requires some knowledge about the construction of the facility and the existing building codes governing local construction. While this assessment is rather subjective, it is a first-level effort at identifying facilities that require more thorough structural investigation. Lower numbers in sections 3 and 4 could potentially indicate reduced vulnerability. Conversely, higher numbers in these sections could potentially indicate increased vulnerability of the facility itself, as well an increase in its operational vulnerability.

The Uniform Construction Code (UCC) ended much of the confusion brought about by the various requirements of obsolete and conflicting standards. In November 1999, Governor Tom Ridge signed Act 45, which established the UCC throughout Pennsylvania. The UCC provides uniform standards for new construction and renovations throughout the state.

The code applies to almost all buildings, excluding manufactured and industrialized housing (which are covered by other laws), agricultural buildings, and certain utility and miscellaneous buildings. The UCC has many advantages. It will require builders to use materials and methods that have been professionally evaluated for quality and safety. Inspectors are required to ensure compliance.

The initial election period, during which all of Pennsylvania's 2,565 municipalities were allowed to decide whether the Uniform Construction Code (UCC) would be administered and enforced locally, officially closed on August 7, 2004[3]. The codes adopted for use under the UCC are the 2003 International Codes issued by the International Code Council. No supplements to the 2003 codes are adopted for use.

If a municipality has "opted in," all UCC enforcement is local, except where municipal (or third party) code officials lack the certification necessary to approve plans and inspect commercial construction for compliance with UCC accessibility requirements[4].

---

[3] Pennsylvania Department of Labor and Industry, *Building Codes: Uniform Construction Code*, http://www.dli.state.pa.us/landi/cwp/view.asp?a=310&q=21089, Accessed 06/2006.

[4] Pennsylvania Department of Labor and Industry, *Building Codes: Uniform Construction Code*, http://www.dli.state.pa.us/landi/cwp/view.asp?a=310&q=21089, Accessed 06/2006.

If a municipality has "opted out," the Department of Labor and Industry is responsible for all commercial code enforcement in that municipality. The Department of Labor and Industry also has sole jurisdiction for all state-owned buildings no matter where they are located[5].

Section 4: Operational Vulnerability

This section requires knowledge of where daily activities are conducted within the structure. This is necessary to determine which areas of the structure are important to conducting critical daily activities. For example, if the first floor of a fire station sustains major flood damage, which includes the destruction of the firefighters' sleeping quarters and fire trucks, it would greatly hamper fire response capabilities. Therefore, the operational vulnerability score would be defined as having "life-threatening impacts," as firefighters would not be readily available to respond to a call. Loss of facilities alone does not necessarily constitute significant loss of operational capability. For example, if only the fire station garage was damaged, but the trucks and equipment had been relocated to higher ground before the flooding occurred, and the sleeping quarters and kitchen were located on the second floor this would not have as great an effect on operations.

Vulnerability Determination

Based on all of the scores for an individual facility, the threshold established for determining low, moderate, and high vulnerability is represented in the table below. These thresholds will help to establish a focused list of the most vulnerable critical facilities.

Critical Infrastructure Vulnerability Rating				
	Low Vulnerability	**Moderate Vulnerability**	**Moderate – High Vulnerability**	**High Vulnerability**
Overall Vulnerability Score	0 — 14	15 — 29	30 — 44	45— 57

---

[5] Pennsylvania Department of Labor and Industry, *Building Codes: Uniform Construction Code*, http://www.dli.state.pa.us/landi/cwp/view.asp?a=310&q=21089, Accessed 06/2006.

Main : Form (Replicated)

Huntingdon County Critical Infrastructure Assessment

Record ID: 0

Date: _____   Completed By: _____

Facility Name: _____

Facility Owner: _____

Facility Point of Contact: _____

Physical Street Address 1: _____

Physical Street Address 2: _____

City- Zip: _____ ▼

Municipality: _____ ▼

CI Category: _____ ▼

Latitude (Decimal Degrees N): _____

Longitude (Decimal Degrees W): _____

Elevation: _____

Tax Parcel: _____   Base Flood Elevation (Feet): _____

Flood Insurance: ☐ Yes   ☐ No   ☐ Unknown

Vulnerability Assessment

	Flood	Severe Weather	Other Hazards	
Risk	▼	▼	▼	0
Damage History	▼	▼	▼	0
Structural Vulnerability	▼	▼	▼	0
Operational Vulnerability	▼	▼	▼	0
Overall Vulnerability Score	0	0	0	0

Notes

Record: |◄ ◄ 161 ► ►| ►* of 161