Hazard Mitigation Plan Update

Steering Committee Meeting

March 21, 2023
1:30-3:00 pm
Agenda

- Safety Moment
- Project Update
- Data collection
  - Data from UK Departments
  - Interviews
- Risk Assessment
- Survey
- Mitigation Strategy
  - Goals
  - Mitigation Actions

Aerial view of the UK Research and Education Center after it took a direct hit from a weekend tornado. Photo by Matt Barton, UK agricultural communications.
Stop & Talk: How to Safely Use Public Wi-Fi Networks

Wi-Fi hotspots in coffee shops, libraries, airports, hotels, universities, and other public places are convenient, but often they are not secure. If you connect to a public Wi-Fi network and send information through websites or mobile apps, someone else might be able to see it. Here are some ways to safely use public Wi-Fi when you’re out and about.

Public Wi-Fi Isn’t Secure

- If the network isn’t secure, and you log into an unencrypted site — or a site that uses encryption only on the sign-in page — other users on the network can see what you see and send.
- A scammer could use your account to impersonate you and scam people on your contact lists or test your usernames and passwords on other websites — including sites that store your financial information.
- If a scammer gets your personal or financial information, they could steal your identity.
- When you sign on to public Wi-Fi, you may also be sharing your data with the companies providing the Wi-Fi.

Information provided by How To Safely Use Public Wi-Fi Networks | FTC Consumer Information

Ways to Encrypt Your Information

- Connect to websites securely. If you see https in the web address, you have a secure connection to the website. But using https does not mean a website is legit.
- Consider using a VPN app. Some virtual private networks, known as VPNs, offer encryption.
- Use your mobile data, as it is usually encrypted. If you’re on the go, don’t have the option of using a secure website and have no VPN encryption, consider using your mobile data instead of Wi-Fi.

Protect Your Information When You Use Public Wi-Fi

- Don’t access your personal or financial information.
- Log in or send personal information only to websites you know are fully encrypted.
- Don’t stay permanently signed into accounts.
- Don’t use the same password on different websites.
- Pay attention to warnings.
- Change your device’s settings so it doesn’t automatically connect to nearby Wi-Fi.
- Install browser add-ons or plug-ins that can help.
Project Update

- Plan Components:
  - Critical Facilities Defined
  - Risk Assessment
  - Capability Assessment
  - 2016 Mitigation Action Workbook
    - 2016 Actions Updated
- Upcoming Meetings
  - Draft Plan Meeting (April 27 or 28, 2023)
  - Mitigation Strategy Steering Committee Meeting (TBD)
Project Update

- Completed Data Collection
- Interviews Performed:
  - Risk Management
  - Research
  - GIS
  - Facilities
  - Hazardous Materials
  - IT
  - Agriculture
  - Health Care
  - Equity – Office for Institutional Diversity
  - Kentucky Climate Consortium
Campus Locations
Risk Assessment – Hazards Reviewed

**Weather Hazards**
- Extreme Heat
- Extreme Cold
- Wildfire
- Hail
- Severe Storm
- Severe Winter Storm
- Tornado

**Hydrological Hazards**
- Flood
- Drought
- Dam/Levee Failure

**Geological Hazards**
- Earthquake
- Landslide
- Karst

**Industrial Hazards**
- Hazardous Materials Release

**Human-Caused Hazards**
- Cyber Attack
- Emerging Infectious Disease
Extreme Heat

- All buildings, infrastructure and populations are considered at risk to extreme heat on UK's main campus and outlying facilities.

- Building Risks
  - Power outages
  - Stress to HVAC systems
  - Buckling/collapse in extreme cases

- Infrastructure Risks
  - Power outages
  - Pavement buckling

- Population Risks
  - Heat-related illness (heat stroke, heat exhaustion, dehydration)
  - Air quality impacts
  - Populations at higher risk: socially vulnerable, athletic teams, outdoor workers, populations in dorms without AC, outdoor sporting events
Extreme Cold

- All buildings, infrastructure and populations are considered at risk to extreme cold on UK’s main campus and outlying facilities.
- 35 extreme cold-related claims between 2012 and 2022 totaling $1.4M
- Building Risks
  - Burst pipes
  - Stress on HVAC systems
  - Power outages
  - Increased risk of fire from alternative heating sources

- Infrastructure Risks
  - Disrupted utility services
  - Broken water mains
  - Stress to asphalt and pavement

- Population Risks
  - Hypothermia and frostbite
  - Carbon monoxide
  - Socially vulnerable populations at higher risk
Severe Storm

- All buildings, infrastructure and populations are considered at risk to severe storm on UK’s main campus and outlying facilities.

- Building Risks
  - Building features being blown off
  - Falling objects and debris
  - Buildings being blown off their foundation
  - Mobile and modular units are at more severe risk
  - Lightning strikes can start fires
  - Roof leaks

- Infrastructure Risks
  - Severe winds and debris can damage utilities, communications, and above ground power
  - Electrical systems, telecommunications equipment, and infrastructure in open areas are more vulnerable to lightning

- Population Risks
  - Falling objects and debris
  - People outside are at risk of being struck by lightning
  - Agricultural researchers face higher exposure
Severe Winter Storm

- All buildings, infrastructure, and populations are considered at risk to severe winter weather

- Building Risks
  - Power outages can result in limited food, supplies, and heat
  - Extreme cold leading to freezing or bursting pipes
  - Roof collapse from snow accumulation

- Infrastructure Risks
  - Road conditions
  - Limited transit operations
  - Critical staff may be unable to reach campus

- Population Risks
  - Falling while walking or removing snow
  - Heart attacks from shoveling snow
  - Falling ice, trees, or branches
  - Agricultural researchers may have more exposure
  - International students may remain on campus with only essential staff during winter breaks
Tornado Profile

- All current and future buildings, infrastructure, and populations are considered at-risk to tornadoes, including critical facilities.
- Eastern, northeastern, and southeastern parts of Kentucky are far less likely to experience tornadoes than the western end of Kentucky.
- Central Kentucky has moderate tornadic and severe wind activity.
- Building Vulnerabilities
  - Buildings can be destroyed
  - Debris hurled by the wind can cause extensive damage
  - Structures most likely to suffer damage:
    - Mobile homes or units
    - Structures with crawlspaces
    - Buildings with large spans (ex. gymnasiums)
- Infrastructure Vulnerabilities
  - Damage to exposed utilities can result in hazardous material spills and leaks
- Population Vulnerabilities
  - Universities have large numbers of people present and others may seek shelter
  - People outside or driving may be struck by flying debris or picked up by tornado winds
  - Agricultural researchers may be unable to reach shelter quickly
Drought

- All buildings, infrastructure and populations are considered at risk to drought on UK’s main campus and outlying facilities.

- Building / Facility Risks
  - Water shortages
  - Impacts to livestock

- Infrastructure Risks
  - Impacts to green infrastructure
  - Impacts to greenspace and outdoor facilities
  - Impacts to agricultural facilities and research

- Population Risks
  - Water use restrictions or higher pricing
  - Insufficient water supply for firefighting (extreme cases)

- Secondary Risks
  - Increased susceptibility to wildfire during drought periods
Flood Profile

- All buildings, infrastructure, and populations at risk, those in FEMA Flood Hazard Areas are considered at highest risk

- No main campus facilities within FEMA Flood Hazard Areas

- 11 facilities within the 1.0% Annual Chance Flood Hazard Area (100-yr)
  - 3 at the North Farm
  - 5 at RCARS
  - 3 at the West Kentucky 4-H Camp

- 5 facilities within the 0.2% Annual Chance Flood Hazard Area (500-yr)
  - 1 at the North Farm
  - 4 at RCARS
Flood Profile

- RCARS
- North Farm

- Flood Profile
- Hydrological Hazards
- RCARS
- North Farm

- University of Kentucky
- Hydrological Hazards
Flood Profile

- West Kentucky 4-H Camp
Dam / Levee Failure

- Buildings, infrastructure, and populations in dam inundation areas or reduced flood risk levee areas are considered at risk to dam failure/levee failure.

- No UK facilities were identified to be in or within 500 feet of a HHPD inundation area or reduced flood risk area.

- Due to the topography, inundation areas in Fayette County show water flowing away from main campus.
Dam / Levee Failure

- Lake Cumberland 4-H Camp
  - Reviewed in comparison to the Wolf Creek Dam
  - The camp is upstream of the dam

- North Central 4-H Camp
  - The camp is upstream from the Lake Carnico Dam (HHPD, Poor Condition)
  - No inundation area available for the Lake Carnico Middle Dam (Significant Hazard Potential, Satisfactory Condition)
Karst Profile

- University buildings, populations, and infrastructure located in moderate or high karst potential are considered at risk.
- Includes all the buildings on the Main Campus, North Farm Campus, South Farm Campus, the Little Research Center, and others.
- 27 critical facilities within the high karst potential area.
  - 26 are on Main Campus
  - 1 is an affiliated building (UK Specialty Pharmacy - Wellington Patient Support Services)
Karst Profile

➤ Bowling Green
➤ Main Campus
➤ Lake Cumberland 4-H Camp
Cyber Attack

- All buildings infrastructure, and populations are potentially at risk, directly and indirectly, to cyber-attacks.
- Universities are especially vulnerable to Cyber Attack due to:
  - Large number of users on personal devices
  - Multiple departments with different security measures
  - Expensive and powerful computing equipment for research
- Building Risks
  - Loss of control of building systems
  - Damage to buildings from loss of control
- Infrastructure Risks
  - Loss of control of systems
  - Systems may be controlled and utilized by others for their own objectives
  - Research activities may be disrupted
- Population Risks
  - Personal information may be stolen
    - UK Healthcare
    - Admissions
  - Monetary damages
  - Loss of important research
  - Loss of trust in the University
Emerging Infectious Diseases

- All current and future populations on the UK campus are considered at risk to infectious illnesses

- Universities are especially vulnerable to infectious diseases due to:
  - Close living quarters and communal dining halls
  - Large number of people working in close proximity
  - Visitors from all over the world and personnel traveling all over the world
  - UK Healthcare may treat uncommon diseases

- Building / Infrastructure Risks
  - May need sterilization or decontamination
  - Use and operations of facilities may change

- Population Risks
  - Healthcare personnel face more exposure
  - Students in close living quarters face more exposure
  - Personnel traveling may be exposed to uncommon infectious diseases

- Other University Risks
  - Classes may move online
  - Operations reductions
  - The University may have to run testing facilities, quarantine facilities, and vaccine clinics.
Survey Summary

Viewed: 858
Started: 220
Completed: 115

Students 2.82%
Faculty 9.60%
Staff 83.62%
Community Member 2.26%
Other 1.36%
Survey: Hazards that are the biggest threat

1. Severe Winter Storm
2. Severe Storm
3. Cyber Threats
4. Tornado
5. Hazardous Materials

1. Tornado
2. Severe Storm
3. Severe Winter Storm
4. Cyber Threats
5. Emergent Infectious Diseases
Mitigation Successes – College of Agriculture and UK Health Care

• College of Agriculture
  • Western Kentucky housed 246 relief workers representing 26 organizations
  • 1,245 youth and families visited to pick-up necessities that were donated (canned food, personal hygiene items, baby formula, tools, clothes, and cleaning supplies)
  • Successfully applied for grant funding for tornado shelters.
  • Extension has emergency action plans for offices. (Action item is to streamline the process.)
  • UK Wellness Department provided mental health sessions to support staff at REC and RCARS.

• UK Health Care
  • Childcare for staff during pandemic
  • Regional vaccine distribution
  • Drive thru testing
Offices for Institutional Diversity

- First generation and international students are vulnerable populations.
  - First generation students often do not have a road map for college
  - International students may have language barriers. Remain on campus during holidays/breaks, therefore they are on campus with essential staff

- Elderly staff members struggle with technology as a vulnerability.

- On-campus food pantry and couch-surfing

- Students and staff with disabilities struggle with mobility as a result of ongoing construction detours.

- Main campus near under resourced zip codes.
  - Bluegrass Community Foundation
  - Jewish Federation of Lexington
  - Fayette County Public Schools

- UK Healthcare
  - Health equity
  - Transform health
  - Polk-Dalton Clinic
  - Clinica Amiga

'Behind the Blue': Katrice Albert discusses UK’s DEI Implementation Plan | UKNow (uky.edu)
2015 Mitigation Goals

GOAL 1 Protect lives and reduce injuries from hazards and threats.
GOAL 2 Protect university property, organizational information, and research from hazards and threats.
GOAL 3 Enhance existing, or develop new University policies and practices that are designed to reduce damaging effects from hazards and threats.
GOAL 4 Build stronger partnerships between government, educational institutions, business, and the community.
GOAL 5 Build disaster preparedness and response through mitigation education and outreach.
## 2023 Mitigation Actions

<table>
<thead>
<tr>
<th>Action Name</th>
<th>Action Description</th>
<th>Responsible Department/Office</th>
<th>Mitigation Addressed</th>
<th>Feasibility</th>
<th>Climate Resilience</th>
<th>Public (Proposed Type)</th>
<th>Public (Hazard of Greatest Concern)</th>
<th>Risk Professional/Benefit</th>
<th>Costs</th>
<th>Total Prioritization</th>
<th>Potential Funding Source</th>
<th>Project Type</th>
<th>Other Partners</th>
<th>Implementation Schedule</th>
<th>Comments and Status</th>
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<tbody>
<tr>
<td>1</td>
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## 2023 Mitigation Actions

<table>
<thead>
<tr>
<th>Name: Disaster Recovery Manager</th>
<th>Description: Hit - Cluster Recovery/Management for the Center for Disaster Recovery and Resilience</th>
<th>Responsibili-ty Department</th>
<th>Center for Disaster Recovery and Resilience</th>
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<tr>
<th>Prioritization Metric</th>
<th>Weighting Factor</th>
<th>Scoring Criteria</th>
<th>Score</th>
<th>Points</th>
<th>Notes</th>
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<tbody>
<tr>
<td>1 Feasibility</td>
<td>20%</td>
<td>1 - Project has been fully implemented within this year 2 - Project has been implemented with only minimal complexity or delay 3 - Project is identified, implementation is complex and has some level of implementation 4 - Not feasible, needs feasibility study and/or not able to be implemented</td>
<td>5</td>
<td>100</td>
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<td>2 Climate Resilience</td>
<td>20%</td>
<td>1 - Project provides multiple benefits for climate resilience or adaptive resilience 2 - High climate protection or low cost benefit for climate resilience 3 - Moderate project provides limited benefit for climate resilience 4 - Low climate project provides no temporary climate resilience</td>
<td>5</td>
<td>100</td>
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<tr>
<td>3 Public (Project Type)</td>
<td>10%</td>
<td>1 - Structural Projects 2 - Public Education and Awareness 3 - Infrastructure Protection 4 - Emergency Preparedness 5 - Prevention</td>
<td>5</td>
<td>50</td>
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<tr>
<td>4 Public (Hazard of greatest concern)</td>
<td>10%</td>
<td>1 - Action addresses one or more hazards identified by the university community as being a high threat to the university 2 - Action addresses one or more hazards identified by the university community as being a moderate threat to the university 3 - Action addresses one or more hazards identified by the university community as being a minimal threat to the university</td>
<td>5</td>
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<td>5 Risk Reduction/Benefits</td>
<td>20%</td>
<td>1 - Project has significant, positive, and significant benefits with consideration to economic, social, and environmental factors 2 - Project has significant, positive, and numerous benefits with consideration to economic, social, and environmental factors 3 - Moderate project benefits with consideration to economic, social, and environmental factors 4 - Low (No benefits identified, no public benefits with consideration to economic, social, and environmental factors)</td>
<td>3</td>
<td>60</td>
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<td>6 Costs</td>
<td>20%</td>
<td>1 - Project costs are significantly reduced 2 - Project costs are estimated between $100,000 to $500,000 3 - Project costs are estimated between $500,000 to $1,000,000 4 - Project costs are estimated above $1,000,000</td>
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Total: 100%
2023 Mitigation Actions

Prevention
- University codes and design standards
- Building codes
- Open space preservation
- Stormwater management
- Capital improvements programming
- Security measures

Property Protection
- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (e.g., windproofing, floodproofing, seismic design techniques, etc.)
- Safe rooms, shutters, shatter-resistant glass
- Insurance
2023 Mitigation Actions

**Natural Resource Protection**
- Floodplain protection
- Watershed management
- Riparian buffers
- Habitat preservation
- Erosion and sediment control
- Wetland preservation and restoration
- Slope stabilization
- Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)

**Emergency Services**
- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection
2023 Mitigation Actions

**Structural Projects**
- Reservoirs
- Dams / levees / dikes / floodwalls
- Diversions / detention / retention
- Channel modifications
- Storm sewers

**Public Education and Awareness**
- Outreach projects
- Library materials
- Student educational programs
- Hazard expositions
- Social media campaigns
- Speaker series / demonstration events
- Hazard map information
- Real estate disclosures
Questions and Contact Information

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Thank you!