

Disaster Scenario 1: Summer Storm - Rain, Flooding, Wind, Heat

During July, Duluth had a long and intense period of precipitation. Record rainfall and increased water levels have left the ground extremely saturated. In the first week of August, a warm front moved in and record-high temperatures are expected for the next four days. With the warm front came additional rain and sustained winds of 25-30 mph, with gusts up to 60 mph. The warm front has shifted the winds from the east to the southwest, bringing higher-than-normal temperatures and humidity. The extreme winds have damaged power lines and multiple electrical substations have failed, leaving the community without power. Consequently, water pump stations and water and sewage are offline. Communication towers have also been damaged, leaving the Twin Ports region with limited access to communication.

Questions:

- What are the impacts of this weather event?
 - Personal
 - Community
 - Infrastructure (social, physical, etc. what do they think?)
- During the event, how are your persona(s) being affected?
 - What, if anything, are they doing?

The storm has ceased; however, the temperature and humidity have risen. The community continues to be without power. Basement flooding has been reported, ranging from a couple of inches to over a foot of water, as many sump pumps do not have electricity or are failing due to the large intake of water. Communication continues to be a barrier with downed communication towers. First responders have deployed, addressing immediate safety concerns and clearing roads of trees and downed powerlines to make way for infrastructure repairs.

Questions:

- Which personas/populations are impacted the most?
 - How are they being affected?
 - When do impacts start?
 - What, if anything, are your personas doing?
 - When are personas taking action?
 - For whom would this scenario create a critical need?
 - When do critical needs arise?

After 48 hours, temperatures and humidity begin to decrease and power is restored. First responders have cleared roadways and repaired the grid and communication infrastructure. All pump stations and water and sewage services are back online serving residents. The community continues to struggle with basement flooding and significant property damage.

Questions:

- What are the lingering challenges associated with this weather event and grid outage? Who is impacted by them?

Disaster Scenario 2: Severe Winter Weather Storm - Freezing Rain, Snow, Ice, Heavy Accumulation

Duluth has experienced average fall weather for the last few months. As we transition to winter in November, snow has started to fall with minimal accumulations and temperatures ranging from 20 to 35 degrees. Toward the end of the month, a severe winter storm hits the Twin Ports region. A mix of freezing rain and snow led to heavy accumulations, resulting in inch-thick ice on trees, powerlines, and roadways. The Department of Transportation has advised the community to cease travel due to weather conditions; as such, the Duluth Transit Authority has suspended services. As the storm continues, temperatures quickly start to drop, reaching sub-zero with a windchill of -30 degrees Fahrenheit. Due to the extreme shift in temperature and moisture, a water main break occurs, causing a 6-block radius of homes to be without water in the Lincoln Park neighborhood. Downed trees and powerlines have caused property damage and grid outages across the community, affecting 80% of homes and businesses in Duluth.

Questions:

- What are the impacts of this weather event?
 - Personal
 - Community
 - Infrastructure
- During the event, how are your persona(s) being affected?
 - What, if anything, are they doing?

The storm has ceased, leaving an inch of solid ice covered in a foot and a half of fresh snow with sustained below-freezing temperatures with a dangerous windchill. First responders and road crews have deployed to support immediate safety concerns and begin clearing roads of down trees and powerlines. The City of Duluth has declared a snow emergency to aid first responders in the removal of snow and ice. Duluth Transit Authority services are still suspended due to limited and unsafe road access. The water line in Lincoln Park is still in need of repair, causing an increase in dangerous ice conditions in the neighborhood. Sustained cold temperatures during the outage begin to cause in-home waterlines to burst.

Questions:

- Which personas/populations are impacted the most?
 - How are they being affected?
 - When do impacts start?
 - What, if anything, are your personas doing?
 - When are personas taking action?
 - For whom, would this scenario create a critical need?
 - When do critical needs arise?

After 3 days, roads are clear of trees and powerlines, and infrastructure is being repaired. Community members are notified that power will be restored bit by bit over the next 5 days, with outage times depending on location and the severity of damages. With cleared roads, Transit Authority services have resumed and businesses are reopening as power returns. The community continues to struggle with ice build-up and property damage.

Questions:

- What are the lingering challenges associated with this weather event and grid outage? Who is impacted by them?

Group Reflection

Response Questions:

- How would you support your personas in response to a grid outage (before power is restored)? When?
- What components do you/your organization see as critical to response (before power is restored)? When?
- What role would your organization play in these scenarios (with your current assets)?
 - What is your current capacity?
 - How do you think you could support in the future? What is your potential capacity? What would you need, etc.?

Recovery Questions:

- How would you support your persona(s) to recover from these weather events and grid outages?
 - What services will you be able to provide to aid recovery?
 - Where do you redirect your persona(s) for services you cannot provide?
- What components do you/your organization see as critical to recovery?

Mitigation Questions:

- How can we improve our ability to respond and recover from grid outages?
- What proactive actions can we take to mitigate the negative impacts of grid outages?
- What do you think would be critical to improving the resilience of individuals and our community during grid outages?
- How would you communicate with your persona(s) without power?

Persona Development

Select the qualities that best describe the community members you serve. There may be more than one for each category.

Name your Persona: _____

Demographics

Age Group:

- ☐ Under 18
- ☐ 18-29
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60-69
- ☐ 70-79
- ☐ 80-89
- ☐ 90-99
- ☐ Over 100

Race/Ethnicity:

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Pacific Islander
- ☐ White/Caucasian
- ☐ Hispanic/Latino

Language/Literacy:

- ☐ Native English speaker
- ☐ English as a second language
- ☐ American Sign Language
- ☐ Does not speak English

Citizenship Status:

- ☐ Undocumented
- ☐ Documented
- ☐ Refugee Status
- ☐ Citizen

Marital Status:

- ☐ Single
- ☐ Married
- ☐ Divorced
- ☐ Widowed

Employment Status:

- ☐ Full-time
- ☐ Part-time
- ☐ Self-employed
- ☐ SSI Disability
- ☐ Seasonal
- ☐ Unemployed
- ☐ Retired

Financial Status:

- ☐ No financial concerns
- ☐ Some financial concerns, but limited stress
- ☐ Currently experiencing some financial distress
- ☐ Currently experiencing extreme financial distress

Emergency Funds:

- ☐ Secure savings/emergency funds
- ☐ Some savings/emergency funds
- ☐ No savings/emergency funds

Health & Wellbeing

Medical History:

- ☐ Good health
- ☐ Compromised health
- ☐ Physical limitations
- ☐ Mental and wellness concerns

Trauma History:

- ☐ No previous trauma
- ☐ Some previous trauma
- ☐ Significant previous trauma

Support Network:

- ☐ Strong
- ☐ Moderate
- ☐ Weak
- ☐ Nonexistent

Health & Wellbeing continued

Health Insurance:

- ☐ Fully Covered
- ☐ Mostly Covered
- ☐ Cannot afford copays/deductibles
- ☐ Catastrophic coverage only
- ☐ None

Food Security:

- ☐ Secure
- ☐ Occasionally Insecure
- ☐ Often Insecure
- ☐ Insecure

Caregiving Responsibilities:

- ☐ Not a caregiver
- ☐ Provides care in household
Number of children: _____
Number of other dependents: _____
- ☐ Provides care out of household
Number of children: _____
Number of other dependents: _____

Household Information:

Housing Type:

- ☐ Homeowner
- ☐ Renter
- ☐ Unhoused
- ☐ Transient

Insurance status (home or renters):

- ☐ Adequately insured
- ☐ Underinsured
- ☐ Not insured

Transportation Access:

- ☐ Own transportation
- ☐ Shared transportation
- ☐ Public transportation
- ☐ Limited access to transportation
- ☐ No access to transportation

Emergency Management Key Terms & Definitions

Disaster: As defined by Minn. Stat. § 12.03, subd. 2, a disaster is "a situation that creates an actual or imminent serious threat to the health and safety of persons, or a situation that has resulted or is likely to result in catastrophic loss to property or the environment, and for which traditional sources of relief and assistance within the affected area are unable to repair or prevent the injury or loss.

Emergency: (federal definition): As defined by the Stafford Disaster Relief and Emergency Assistance Act, an emergency is "any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement state and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States."

Resilience: Resilience is the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Phases of Emergency Management:

Prevention: Actions taken to avoid an incident, to intervene to stop an incident from occurring, and to protect lives and property.

Mitigation: Preventing future emergencies or minimizing their effects.

Includes any activities that prevent an emergency, reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies. Mitigation activities take place **before** and **after** emergencies.

Preparedness: The range of deliberate, critical tasks and activities necessary to build, sustain, and improve the operational capability to prevent, protect against, respond to, and recover from emergencies. Preparedness is a continuous process involving efforts at all levels of government and between government and private-sector and non-governmental organizations to identify threats, determine vulnerabilities, and identify required resources. Preparedness activities take place **before** an emergency occurs.

Response: Reaction to the occurrence of a disaster or emergency. Includes the coordination and management of resources (including personnel, equipment, and supplies). This includes immediate actions to save lives, protect property, and meet basic human needs. Response activities take place **during** an emergency.

Recovery: Consists of those activities that continue beyond the emergency period to restore critical community functions and develop, coordinate, and execute stabilization efforts. Includes actions taken to return to a normal or an even safer situation following an emergency. Recovery activities take place **after** an emergency.

Additional Terms:

Capacity: The combination of all the strengths, attributes, and resources available within an organization, community, or society to manage and reduce disaster risks and strengthen resilience.

Grid outage: also known as a power outage or grid failure and can result in "blackouts." Grid outages occur when there is a failure at any point in the electricity delivery process of generation, transmission, and generation.

Hazard: The potential harm or damage of a situation that poses a level of threat to life, health, property, or environment. A variable or factor that is potentially dangerous or harmful. Can be natural or man-made.

(Critical) Infrastructure: The physical structures, facilities, networks, and other assets that provide essential services to the social and economic functioning of a community or society.