Duluth Power Outage

Situation Manual

October 16, 2023

This Situation Manual (SitMan) provides exercise participants with all the necessary tools for their roles in the exercise. Some exercise material is intended for the exclusive use of exercise planners, facilitators, and evaluators, but players may view other materials that are necessary to their performance. All exercise participants may view the SitMan.

EXERCISE OVERVIEW

Exercise Name	Duluth Power Outage
Exercise Dates	**October 16, 2023 – 12:00 pm - 4:00 pm**
Scope	This is an emergency response tabletop exercise planned for four (4) hours at the Duluth Main Public Library. Exercise play is limited to as a discussion-based exercise as part of the Duluth Power Loss RACER grant exercise, Emergency Operations Center (EOC) implementation, operational coordination, community response, and communication during a city-wide power outage.
Mission Area(s)	Coordination, Response, Recovery, and Mitigation
Core Capabilities	Planning Operational Coordination & Communication Infrastructure Systems Threat & Hazard Safety Community Safety Future Hazard Identification & Prevention
Objectives	- Communicate and coordinate effectively to mitigate the effects of the power outage after 2, 4, 12, 24, & 48-hour periods - Demonstrate detection of power failure and response to restore power - Take immediate action to mitigate events effects on the public, residences, and the power grid - Demonstrate response to residents with specific focus on the risk to vulnerable populations and underserved neighborhoods - Identify opportunities for future power outage prevention and creation of community resources
Threat or Hazard	City-wide power outage
Scenario	City-wide power outage during an extreme heat event after a month of heavy rains and increased water levels
Sponsor	City of Duluth

Participating Organizations	City of Duluth Comfort Systems Minnesota Power St. Louis County Western Lake Superior Sanitary District Ready North Network Essentia St. Luke's Hospital Marine Safety Unit (Coast Guard) MN Department of Transportation Duluth Police Department Duluth Fire Department University of Minnesota Duluth Red Cross NOAA Ecolibrium 3
Point of Contact	Brett Crecelius Community Resilience Project Coordinator (218)-730-8481 411 West 1st Street Duluth, MN 55802 bcrecelius@duluthmn.gov Rob Morehouse Deputy Fire Chief (218)-730-4395 602 West 2nd Street Duluth, MN 55802 rmorehouse@duluthmn.gov Mindy Granley Sustainability Officer (218)-730-5334 411 West 1st Street Duluth, MN 55802 mgranley@duluthmn.gov

GENERAL INFORMATION

Exercise Objectives and Core Capabilities

The following exercise objectives in Table 1 describe the expected outcomes for the exercise. The objectives are linked to core capabilities, which are distinct critical elements necessary to achieve the specific mission area(s). The objectives and aligned core capabilities are guided by elected and appointed officials and selected by the Exercise Planning Team.

Exercise Objective	Core Capability
Communicate and coordinate effectively to mitigate the effects of the power outage after 1, 5, 12, 24, & 48-hour periods	Planning Operational Coordination & Communication Threat & Hazard Safety Infrastructure Systems
Demonstrate detection of power failure and response to restore power	Threat & Hazard Safety Infrastructure Systems
Take immediate action to mitigate events effects on the public, residence, and the power grid	Planning Operational Coordination & Communication Infrastructure Systems Community Safety
Demonstrate and communicate response to the public with specific focus on the risk to vulnerable populations and underserved neighborhoods	Operational Coordination & Communication Community Safety
Identify opportunities for future power outage prevention and creation of community resources for community resiliency	Planning Future Hazard Identification & Prevention

Table 1. Exercise Objectives and Associated Core Capabilities

Participant Roles and Responsibilities

The term *participant* encompasses many groups of people, not just those playing in the exercise. Groups of participants involved in the exercise, and their respective roles and responsibilities, are as follows:

- **Players.** Players are personnel who have an active role in discussing or performing their regular roles and responsibilities during the exercise. Players discuss or initiate actions in response to the simulated emergency.
- **Observers.** Observers do not directly participate in the exercise. However, they may support the development of player responses to the situation during the discussion by asking relevant questions or providing subject matter expertise.
- **Facilitators.** Facilitators provide situation updates and moderate discussions. They also provide additional information or resolve questions as required. Key Exercise Planning

Team members also may assist with facilitation as subject matter experts (SMEs) during the exercise.

- **Evaluators.** Evaluators are assigned to observe and document certain objectives during the exercise. Their primary role is to document player discussions, including how and if those discussions conform to plans, polices, and procedures.

Exercise Structure

This exercise will be a multimedia, facilitated exercise. Players will participate in the following four modules:

- Module 1: Trigger Event
- Module 2: Response
- Module 3: Recovery
- Module 4: Mitigate
- Hot Wash

Each module begins with a multimedia update that summarizes key events occurring within that time period. After the updates, participants review the situation and engage in functional group discussions of appropriate coordination, response, recovery, and mitigation issues. For this exercise, the functional groups are as follows:

Emergency & Infrastructure Response	Community Response
City of Duluth Duluth Police Department Duluth Fire Department Minnesota Power Western Lake Superior Sanitary District State & County Emergency Management MN Homeland Security & Management MN Department of Transportation Comfort Systems Marine Safety Unit	City of Duluth Duluth Police Department Duluth Fire Department Minnesota Power Ready north Network Ecolibrium 3 Essentia St. Luke's Hospital University of Minnesota Duluth St. Louis County Public Health

After these functional group discussions, participants will engage in a moderated plenary discussion in which a spokesperson from each group will present a synopsis of the group's actions, based on the scenario.

Exercise Guidelines

- This exercise will be held in an open, low-stress, no-fault environment. Varying viewpoints, even disagreements, are expected.
- Respond to the scenario using your knowledge of current plans and capabilities (i.e., you may use only existing assets) and insights derived from your training.

- Decisions are not precedent setting and may not reflect your organization's final position on a given issue. This exercise is an opportunity to discuss and present multiple options and possible solutions.
- Issue identification is not as valuable as suggestions and recommended actions that could improve coordination, response, recovery, and mitigation efforts. Problem-solving efforts should be the focus.

Exercise Assumptions and Artificialities

In any exercise, assumptions and artificialities may be necessary to complete play in the time allotted and/or account for logistical limitations. Exercise participants should accept that assumptions and artificialities are inherent in any exercise, and should not allow these considerations to negatively impact their participation. During this exercise, the following apply:

- The exercise is conducted in a no-fault learning environment wherein capabilities, plans, systems, and processes will be evaluated.
- The exercise scenario is plausible, and events occur as they are presented.
- All players receive information at the same time.

Exercise Evaluation

Evaluation of the exercise is based on the exercise objectives and aligned capabilities, capability targets, and critical tasks, which are documented in Exercise Evaluation Guides (EEGs). Evaluators have EEGs for each of their assigned areas. Additionally, players will be asked to complete participant feedback forms. These documents, coupled with facilitator observations and notes, will be used to evaluate the exercise and compile the After-Action Report (AAR).

Background Information

During the month of July, Duluth has seen 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 has moved in and record highs are expected for the next four days. The warm front has brought with it sustained winds of 25-30 mph, with gusts up to 60 mph, and they have crippled our power grid. The warm front has shifted the winds from the east to the southwest, bringing with it higher than normal temperatures and humidity.

Casualties: Currently none, but local clinics, hospitals, nursing homes and individuals depending on power to avoid exposure to the heat and humidity are at risk.

Infrastructure Damage: Infrastructure damage from the winds is significant, with multiple electrical substations and power lines failing, leaving multiple neighborhoods without power and access dur to blocked roads. There is no power to the water plant and multiple pump stations.

Evacuations/Displaced Persons: No evacuations have occurred, but the potential for resident displacement due to lack of cooling resources is expected.

Economic Impact: Millions of dollars to public/private populations and infrastructure in the region. Further loss due to tourism impacts.

MODULE 1: TRIGGER EVENT

August 6, 2024: 11:00 AM (One hour into outage)

During the first week of August, a warm front moved in after a month of heavier than normal rain conditions, leading to above average water levels and saturated ground. Heavy winds developed on the front with sustained winds of 25-30 mph and gusts up to 65 mph. At 10:00 am on the morning of the 6th, the excessive winds knocked out multiple substations and multiple power lines through the city, leaving the majority of the community without power.

Over the next two (2) days the weather forecasters are predicting high's in the upper 90's during the day, with overnight lows only reducing to the upper 70's. They are also predicting average humidity levels to stay between 82-88% over the two (2) day period. Additionally, due to the wet conditions of the previous month, water levels are still high and many sump pumps have been working continuously to keep basements dry.

The cause of the power failure has been identified as multiple failing substations. Additionally, there are multiple power lines that have failed and power poles that have fallen, blocking multiple roads throughout the city. Early estimates state that at least 75 locations are impacted by downed powerlines and trees. First responders are busy with numerous calls to assist with road blockage. The temperatures have already climbed to 88 degrees Fahrenheit with 83% humidity. Communication is difficult due to many cell towers being damaged or having a lack of backup power available on site.

Key Issues

- Determining critical emergency points to restore power
- Coordinating public and private organization communication and coordination
- Notification to community on priorities and power outage timelines
- Evaluating infrastructure and backup power generation priorities
- Assess hazards and prepare facilities and people
- Activate response teams

Questions

Based on the information provided, participate in the discussion concerning the issues raised in Module 1. Identify any critical issues, decisions, requirements, or questions that should be addressed at this time.

The following questions are provided as suggested subjects that you may wish to address as the discussion progresses. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question.

Module 1 Discussion

1. What role does your organization/department assume during the initial response to the event?

   _____
   _____
   _____

2. Does your organization have plans related to an event of this type/magnitude?

   _____
   _____
   _____

3. Who will you notify within your organization at the beginning of the incident? Does everyone who is to be notified know what the response should be after an event of this magnitude?

   _____
   _____
   _____

4. Outside of your organization, who will be your first contact to begin organizing a response after one hour?

   _____
   _____
   _____

5. Which organization(s) should be communicating with the public? Depending on that organization, what would be the most effective way to reach everyone in the community?

   _____
   _____
   _____

6. As communication is difficult between organization and first responders, what is the best way for the response to be coordinated between all organizations?

   _____
   _____
   _____

MODULE 2: RESPOND

August 6, 2024: 3:00 PM (Five hours into outage)

It is now mid-afternoon after the warm front has moved in. The temperatures have risen to 99 degrees Fahrenheit this afternoon with 88% humidity levels. Minnesota Power has begun to evaluate the outage, but all neighborhoods in the City are still without power.

The Gary-New Duluth, Fond du Lac, and Morgan Park neighborhoods are beginning to experience flooding in their basements due to lack of power to their sump pumps. Multiple nursing homes and low-income senior living facilities are without power and lack access to air conditioning. Additionally, all three pumps at the main pump station located on Congdon Boulevard are without power and unable to pump water in from the lake our out from the reservoirs. Water pumps on the upper Lakeside and Arlington are without backup power and are leaving residents in neighborhoods in Duluth heights and upper lakeside with dwindling water access. Due to an extremely wet period prior to the event, city waste water reservoirs are at 85% capacity.

Downtown and Canal Park businesses and hotels have been without power since the beginning of the outage and it is the middle of peak tourist season. First responders continue to be busy with additional calls on downed power lines and trees, but as the heat rises, calls requiring response to resident health concerns increase. Clinics, Urgent Cares, and Emergency Rooms have seen a sharp increase in heat stroke patient's intake and are beginning to reach capacity. Cell phone communication continues to be difficult as many of the cell towers have been damaged or do not have back up power generators on site.

August 6, 2024: 10:00 PM (12 hours into outage)

Twelve (12) hours have passed and power is still unable to be restored. At the hottest part of the day, temperatures reached 99 degrees Fahrenheit. Temperatures have climbed back down to 84 degrees Fahrenheit, with an overnight low of 80 degrees predicted. The humidity is still above average and residing currently at 80%. Minnesota power was still unable to identify all of the power outage reasons and hasn't been able to restore power in any parts of the city.

First responders have been inundated with calls for downed power lines throughout the day, but have achieved clearing 60% of the blocked roads. The work has slowed down due to an increased number oh health and safety calls due to the extreme heat and lack of air conditioning. Clinics, Urgent Cares, and Emergency Rooms are at 90% capacity. Reservoirs on Arlington and Upper Lakeside continue to be without power, continuing the lack of water in these neighborhoods. Many cell towers have begun to be restored and/or backup power brought to the site, making communication somewhat easier.

August 7, 2024: 10:00 AM (24 hours into outage)

Temperatures have climbed back up to 93 degrees Fahrenheit and the humidity today is supposed to hover around 90%. Today's forecast calls for a high another high of 99 degrees Fahrenheit. Minnesota Power has been unable to restore power to the majority of the city

Many basements in the Fond du Lac, Gary-New Duluth, and Morgan Park neighborhoods have experienced flooded basements due to sump pumps not working; many of these basements are seeing one or more inches of standing water. Without power, many homes are starting to lose food as refrigerators lack power to keep items cold. Communication with residents has become an issue as many residents lack the ability to charge cell phones and many are without access to charging capabilities.

First responders have now been able to clear 85% of the roadways and will have the remaining roads cleared within the next 24 hours. Health and Safety calls and response continue to increase as the sustained heat is becoming an issue for more vulnerable populations. All Clinics, Urgent Cares, and Emergency Rooms are now at 100% capacity from heat related illness. Pump stations on Arlington and in Upper Lakeside have been able to be put back online with backup generators, while all other stations remain without power and back up generators. Cell towers have now all been restored to functioning and service is back at full strength, but communication with residents is still difficult due to lack of power to charge cell phones.

Key Issues

- Priorities of response as issues compound
- Assess, prioritize, and restore damaged services and systems
- Coordinate among local responders, government agencies, and private sectors organizations
- Communication with the public on response times, power outage, and restoration goals
- Provide relief to community members and businesses

Questions

Based on the information provided, participate in the discussion concerning the issues raised in Module 2. Identify any critical issues, decisions, requirements, or questions that should be addressed at this time.

The following questions are provided as suggested subjects that you may wish to address as the discussion progresses. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question.

Module 2 Discussion

3:00 pm – Five hours after event (August 6, 2024)

1. What is your organization's priorities at this time?

   _____
   _____
   _____

2. How does your organization's priority work together with other organizations in the community to respond to the event?

   _____
   _____
   _____

3. At this time, what are vulnerable populations that require immediate assistance? Who are the community partners we need to rely on to deliver assistance and how will they accomplish this?

   _____
   _____
   _____

4. What message(s) do we need to communicate at this time and to whom?

   _____
   _____
   _____

5. What are the secondary or tertiary hazards associated with this event?

   _____
   _____
   _____

10:00 PM – 12 hours after event (August 6, 2024)

1. What are the initial actions/reactions to this new information?

   _____
   _____
   _____

2. What is your organization's priority at this time? Has it shifted as the time after event has increased?

_____
_____
_____

3. How does your organization continue to respond to the event? Has your organization's priority shifted? If so, what is the focus currently?

_____
_____
_____

4. Is there a different vulnerable population at this point after the event or does it remain consistent? Have the community partners needed to assist these populations shifted?

_____
_____
_____

5. What message(s) do we need to communicate at this time and to whom?

_____
_____
_____

10:00 AM – 24 hours after event (August 7, 2024)

1. What are the initial actions/reactions to this new information?

_____
_____
_____

2. What is your organization's priority at this time? Has it shifted as the time after event has increased?

_____
_____
_____

3. How does your organization continue to respond to the event? Has your organization's priority shifted? If so, what is the focus currently?

_____
_____
_____

4. Is there a different vulnerable population at this point after the event or does it remain consistent? Have the community partners needed to assist these populations shifted?

   _____
   _____
   _____

5. What message(s) do we need to communicate at this time and to whom?

   _____
   _____
   _____

6. After 24 hours, what is your organization's needs of equipment, supplies, staffing, assistance, etc. At this point? What are the community needs after 24 hours?

   _____
   _____
   _____

7. How will you address the displacement of vulnerable populations from their homes due to extreme heat?

   _____
   _____
   _____

MODULE 3: RECOVERY

August 8, 2024: 10:00 AM (48 hours into outage)

The second day of power loss saw a record high of 99 degrees Fahrenheit and the humidity has remained around 85%. Temperatures are predicted to come down but will remain in the upper 80's for the next week, remaining higher than average. Humidity has eased up as well and will remain in the 65-75% range over the next week. While the relief is welcome, many residents are still at risk.

Power has been restored to all pump stations, and water and sewage are back online serving residents. Many residents in the Fond du Lac, Gary-New Duluth, and Morgan Park neighborhoods still have standing water in their basements but hope to see that remediate as sump pumps come back online. The majority of homes in areas of the city that haven't had power for 48 hours have lost the majority of their food in their refrigerators and freezers. As people are able to charge their phones, communication with the public is able to happen as we look to recover from the outage.

All roads have been able to be cleared of debris after 48 hours and all traffic is able to get around the city. Health and safety response calls have decreased, but calls continue to come in continually keeping first responders to busy. Clinics, Urgent Cares, and Emergency Rooms continue to operate at 100% capacity.

Key Issues

- Provide Relief
- Assess short-term and long-term damage
- Form committee to plan long-term recovery
- Communication with the public on recovery efforts
- Repair infrastructure

Questions

Based on the information provided, participate in the discussion concerning the issues raised in Module 3. Identify any critical issues, decisions, requirements, or questions that should be addressed at this time.

The following questions are provided as suggested subjects that you may wish to address as the discussion progresses. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question.

Module 3 - Discussion

1. What role, if any, does your organization play in the short and long-term recovery of this event?

   _____
   _____
   _____

2. How will your organization repair any structural or physical damage? If structural or physical damage repair is not your organization's focus, what can you do to assist in this part of the recovery process?

   _____
   _____
   _____

3. How will you immediately assist other organizations and/or the community with recovery?

   _____
   _____
   _____

4. How will your organization address, or support other organizations to address, the health and safety hazards with the persons affected?

   _____
   _____
   _____

5. How will we limit economic loss to businesses and industries? How will we limit personal loss of life and property?

   _____
   _____
   _____

6. How will you address, or help to address, any displacement from the heat or water damage?

   _____
   _____
   _____

MODULE 4: MITIGATE

August 20, 2024: 12:00 PM

It has been two (2) weeks since 100% of the power was restored to the City of Duluth. The roads have been reopened and any of the infrastructure damage has been temporarily repaired until long term solutions are completed. Mutual aid teams are sill in the area assisting Minnesota Power complete power line and substation repairs.

All water and pumping stations have resumed work and all neighborhoods are again receiving service. All cell communication is back online and people are able to power phones to receive communication. Sump pumps in the Fond du Lac, Gary-New Duluth, and Morgan Park neighborhoods have resumed pumping but there is significant water damage in many of the homes.

Community members are continuing to ask what the City of Duluth and Minnesota Power is doing to ensure resiliency in a similar future situation. After-Action Reviews are being conducted with varying departments and organizations to ensure proper mitigation in the future.

Key Issues

- What hazards have been identified in the community?
- What steps can community-based organizations take to mitigate community-wide risks?
- What steps can private and public organizations take to mitigate community-wide risk?
- Were any discrepancies identified between different needs of different neighborhoods?

Questions

Based on the information provided, participate in the discussion concerning the issues raised in Module 4. Identify any critical issues, decisions, requirements, or questions that should be addressed at this time.

The following questions are provided as suggested subjects that you may wish to address as the discussion progresses. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question.

Module 4: Mitigate

1. What gaps in response and recovery have been identified with regard to this event that need to be addressed?

   _____
   _____
   _____

2. What vulnerable populations were identified that were particularly susceptible to an event such as this? Did that population change over the course of the exercise?

   _____
   _____
   _____

3. What weaknesses in the infrastructure were identified? What can your organization or partner organizations do to mitigate these weaknesses?

   _____
   _____
   _____

4. Were certain areas/neighborhoods of the city more susceptible to damage from this event than other areas of the city?

   _____
   _____
   _____

5. What gaps in organizational and community response were identified?

   _____
   _____
   _____

6. Are there other similar hazards in the community that could create this scale of response (besides a city-wide power outage)?

   _____
   _____
   _____

7. What would the community need and/or response efforts need to be focused on if the power outage lasted an entire week?

   _____
   _____
   _____

HOT WASH

Questions

1. What gaps were revealed in this exercise in our preparedness, response, and recovery to an event such as this?

   _____
   _____
   _____

2. What were our strengths in the preparedness, response, and recovery?

   _____
   _____
   _____

3. What can we do a s a community to mitigate the effect of an event such as this in the future?

   _____
   _____
   _____

4. What steps can we institute as a community to ensure more resiliency in the long-term?

   _____
   _____
   _____

5. What gaps exist in organizations available to respond to such an event? Are we missing key partners to respond appropriately?

   _____
   _____
   _____

6. Were any disparities identified between different communities and neighborhoods? If so, which areas of the city were most vulnerable?

   _____
   _____
   _____

APPENDIX A: EXERCISE SCHEDULE

Note: Because this information is updated throughout the exercise planning process, appendices may be developed as stand-alone documents rather than part of the SitMan.

Time	Activity
October 16, 2023	
12:00	Registration/Lunch/Networking
12:30	Welcome and Opening Remarks
12:40	Module 1: Briefing, Caucus Discussion, and Brief-Back
1:10	Break
1:20	Module 2: Briefing, Caucus Discussion, and Brief-Back
2:10	Break
2:20	Module 3: Briefing, Caucus Discussion, and Brief-Back
2:50	Break
3:00	Module 4: Briefing Caucus Discussion, and Brief-Back
3:30	Hot Wash
3:50	Closing Comments

APPENDIX B: EXERCISE PARTICIPANTS

Participating Organizations
State/County
Minnesota and St. Louis County Emergency Management
St. Louis County Public Health
Minnesota Department of Transportation
Minnesota Homeland Security & Homeland Management
Marine Safety Unit (Coast Guard)
Local
City of Duluth (Engineering, Planning & Development, Sustainability)
Duluth Fire Department
Duluth Police Department
University Minnesota - Duluth
Comfort Systems
Private Organization
Minnesota Power
Western Lake Superior Sanitary District
Essentia
St. Luke's Hospital
Community Based Organizations
Ready North Network
Ecolibrium 3

APPENDIX C: ACRONYMS

Acronym	Term
DHS	U.S. Department of Homeland Security
HSEEP	Homeland Security Exercise and Evaluation Program
SitMan	Situation Manual
SME	Subject Matter Expert
TTX	Tabletop Exercise