

## **LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)**

### SCENARIO

There has been a recent heat wave over the last week and the weather forecast for today is a sunny 98 degrees with 85% humidity. Your hospital census is 90% and you have seen an increase in patients presenting to the Emergency Department with heat related illnesses, many are elderly patients that do not tolerate the heat well. The HVAC system is operating at maximum capacity. At 1:00 pm, a dust fire breaks out in the blower housing of the HVAC system. The fire is quickly extinguished but smoke permeates through the air/heat vents, resulting in burning of eyes and minor respiratory symptoms in patients, staff and visitors in the immediate areas. The HVAC system is shut down and there is no air-conditioning or negative pressure in isolation rooms. Staff and patients open windows and doors, as they are able, to clear out the smoke.

Within the hour, the internal hospital temperature is heating up, and fans are deployed throughout the facility, including patient rooms. However, the hospital does not have enough fans for the entire facility. There is one infectious patient in an isolation room and negative pressure is no longer available. Surgeries and elective procedures are cancelled.

Engineering/Plant Operations reports that a new HVAC blower housing has been ordered but will not arrive for at least 48 hours. It will require at least six hours for installation.



# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT PLANNING GUIDE

### Does your Emergency Management Plan Address the following issues?

---

#### Mitigation & Preparedness

---

1. Does your hospital regularly evaluate the HVAC systems during high use/demand periods to ensure continued service and prevent failure?

---

2. Does your hospital Emergency Management Plan include triggers or criteria for activation of the Emergency Operations plan and the Hospital Command Center?

---

3. Does your hospital have a plan to address loss of HVAC systems that includes measures to temporarily cool the facility and protect patients, staff and visitors?

---

4. Does your hospital have a protocol to immediately assess patient conditions and prioritize those at most risk for heat related injuries?

---

5. Does your hospital have a plan to determine the need for partial or complete evacuation of the facility to protect patients and staff?

---

6. Does your hospital have procedures to rapidly replace air filters (e.g. HEPA) within the HVAC system?

---

7. Does your hospital have contracts with vendors and/or HVAC contractors for emergency repairs and immediate response?

---

8. Does your hospital have a protocol to notify local emergency management, public health department EMS, ambulance providers and other area hospitals of the situation and possible need to evacuate?

---

9. Does your hospital have procedures to communicate situation and safety information to staff, patients and families?

---

10. Does your hospital have procedures to evaluate need for and obtain additional staff?

---

11. Does your hospital have procedures for establishing media staging area and for providing regular press briefings on hospital status?

---

#### Response & Recovery

---

1. Does your hospital have procedures to assess extent and possible duration of loss of HVAC?

---

2. Does your hospital have a process to evaluate the short and long-term impact of the loss the HVAC on the patients, staff and facility?

---

3. Does your hospital have a process to determine the need for canceling elective procedures and surgeries and other non-essential hospital services?

---

4. Does your hospital have criteria and a process to determine the need for complete or partial evacuation of the facility?

---

5. Does your hospital have a process to assess patients for early discharge to decrease patient census?

---

## LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

### INCIDENT PLANNING GUIDE

- 
6. Does your hospital have the capability to provide temporary negative pressure isolation (e.g., portable filtration)?

---

  7. Does your hospital have a plan to provide staff information on the situation and temporary measures to implement to protect patients and visitors (i.e., fans, cooling measures, hydration, etc.)?

---

  8. Does your hospital have procedures to notify patient's family members of the situation?

---

  9. Does your hospital have a process to curtail or cancel non-essential functions (e.g., meetings, conferences, gift shop, etc.)?

---

  10. Does your hospital have a process to determine the need to limit patient visitation?

---

  11. Does your hospital have a plan to document actions, decisions and activities and track response expenses and lost revenues?

---

  12. Does your hospital have procedures to monitor and revise facility repair plan, as appropriate?

---

  13. Does your hospital have procedures to provide accurate and timely briefings to staff, patients, families, and area hospitals during extended operations?

---

  14. Does your hospital plan for demobilization and system recovery during response?

---

  15. Does your hospital have a plan to conduct regular media briefings, in collaboration with the local emergency management agency and/or other responders?

---

  16. Does your hospital have procedures for restoring normal facility visitation, and non-essential service operations (e.g., gift shop, conferences, etc.)?

---

  17. Does your hospital have procedures for repatriation of patients that were transferred or evacuated?

---

  18. Does your hospital have procedures to document patient, visitor and staff injuries?

---

  19. Does your hospital have procedures for after action reporting and developing an improvement plan?
-

# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT RESPONSE GUIDE

**Mission:** To safely manage the loss of HVAC within the hospital.

### Directions

---

- Read this entire response guide and review incident management team chart
  - Use this response guide as a checklist to ensure all tasks are addressed and completed
- 

### Objectives

---

- Identify the extent and duration of the loss of HVAC
  - Protect patient, family, staff and facility
  - Minimize the impact of the loss of HVAC on patients and staff and consider evacuations
  - Communicate situation status and updates to staff, patients, visitors and facility
- 

### Immediate (Operational Period 0-2 Hours)

---

#### COMMAND

(Incident Commander):

- Activate the facility Emergency Operations Plan
- Activate Command Staff and Section Chiefs, as appropriate

(Liaison Officer):

- Notify local emergency management of situation and immediate actions
  - Notify local EMS and ambulance providers about the situation and possible need to evacuate
  - Communicate with other healthcare facilities to determine:
    - Situation status
    - Surge capacity
    - Patient transfer/bed availability
    - Ability to loan needed equipment, supplies, medications, personnel, etc.
  - Contact the Regional Hospital Coordination Center, if exists, to notify about the situation and request assistance with patient evacuation destinations
-

# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT RESPONSE GUIDE

---

### COMMAND

(Public Information Officer):

- Inform staff, patients and families of situation and actions underway to cool the facility and protect life
- Prepare media staging area in a safe locations
- Conduct regular media briefings, in collaboration local emergency management, as appropriate

(Safety Officer):

- Evaluate safety of patients, family, staff and facility and recommend protective and corrective actions to minimize hazards and risks
- 

### OPERATIONS

- Assess patients for risk and prioritize care as appropriate
  - Implement alternate cooling measures for the patients, perishable supplies and the facility
  - Secure the facility and implement limited visitation policy
  - Assess the HVAC system and prepare a plan and timeline for repair and restoration of service
  - Ensure continuation of patient care and essential services
  - Consider partial or complete evacuation of the facility, or relocation of patients and services within the facility
  - Maintain communications systems and other utilities
- 

### PLANNING

- Establish operational periods, incident objectives and develop the Incident Action Plan, in collaboration with the Incident Commander
  - Implement patient and personnel tracking, as appropriate
-

# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT RESPONSE GUIDE

---

### LOGISTICS

- Assess HVAC system damage and project impacts of heat on the facility, equipment and perishables
  - Maintain other utilities and activate alternate systems as needed
  - Investigate and provide recommendations for rental of portable HVAC units
  - Investigate and provide recommendations for rental of portable filtration such as HEPA units and temporary isolation capability
  - Identify needed replacement air filters (e.g. HEPA) for HVAC system
  - Provide for water, food and rest periods for staff
  - Monitor staff for heat related injuries and provide appropriate follow up
  - Obtain supplemental staffing, as needed
  - Prepare for transportation of evacuated patients
- 

### Intermediate and Extended (Operational Period 2 to Greater than 12 Hours)

---

#### COMMAND

(Incident Commander):

- Update and revise the Incident Action Plan and prepare for demobilization
- Continue to update internal officials on the situation status
- Monitor evacuation, if activated

(PIO):

- Continue with briefings and situation updates with staff, patients and families
- Continue patient information center operations, in collaboration with Liaison Officer

(Liaison Officer):

- Continue to notify local EOC of situation status, critical issues and request assistance, as needed
- Continue patient information center operations, in collaboration with PIO
- Continue communications with area hospitals and facilitate patient transfers

(Safety):

- Continue to evaluate facility operations for safety and hazards and take immediate corrective actions
-

# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT RESPONSE GUIDE

---

### OPERATIONS

- Continue evaluation of patient and visitors for heat impacts and maintain cooling measures
- Cancel elective surgeries and procedures
- Prepare the staging area for patient transfer/evacuation
- Initiate ambulance diversion procedures
- Continue or implement patient evacuation
- Ensure the transfer of patient's belongings, medications and records upon evacuation
- Continue evaluation and provision of temporary HVAC systems and portable filtration units
- Ensure facility security and restricted visitation
- Ensure provision of water and food to patients, visitors and families
- Continue to maintain other utilities
- Monitor patients for adverse affects of heath and psychological stress
- Institute HVAC repairs and services
- Prepare demobilization and system recovery plan

---

### PLANNING

- Continue patient, bed and personnel tracking
- Update and revise the Incident Action Plan
- Plan for repatriation of patients
- Prepare demobilization and system recovery plan
- Ensure documentation of actions, decisions and activities

---

### LOGISTICS

- Continue provision of portable HVAC units and filtration systems
  - Continue to provide staff for patient care and evacuation
  - Monitor staff for adverse affects of heath and psychological stress
  - Monitor, report, follow up on and document staff or patient injuries
  - Continue to provide transportation services for internal operations and patient evacuation
-

# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT RESPONSE GUIDE

---

### FINANCE/ADMINISTRATION

- Continue to track costs and expenditures and lost revenue
  - Continue to facilitate contracting for facility repair and clean up
- 

### Demobilization/System Recovery

---

#### COMMAND

(Incident Commander):

- Determine hospital status and declare restoration of HVAC services and termination of the incident

(Liaison Officer):

- Communicate final hospital status and termination of the incident to local EOC, area hospital and officials
- Assist with the repatriation of patients transferred

(PIO):

- Conduct final media briefing and assist with updating staff, patients, families and others of the termination of the event

(Safety Officer):

- Ensure facility safety and restoration of normal operations
  - Ensure facility repairs are completed, in conjunction with the Operations and Logistics Sections
- 

#### OPERATIONS

- Restore normal patient care operations
  - Ensure restoration of HVAC services and negative pressure isolation rooms
  - Repatriate evacuated patients
  - Discontinue ambulance diversion and visitor limitations
-

# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT RESPONSE GUIDE

---

### PLANNING

- Finalize the Incident Action Plan and demobilization plan
  - Compile a final report of the incident and hospital response and recovery operations
  - Ensure appropriate archiving of incident documentation
  - Conduct after-action reviews and debriefing
  - Write after-action report and corrective action plan for approval by the Incident Commander to include the following:
    - Summary of actions taken
    - Summary of the incident
    - Actions that went well
    - Area for improvement
- 

### LOGISTICS

- Restock supplies, equipment, medications, food and water
  - Ensure communication and IT/IS operations return to normal
  - Replace all damaged or soiled air handling filters (e.g. HEPA)
  - Provide stress management and mental health support to staff
- 

### FINANCE/ADMINISTRATION

- Compile a final report of response and facility repair costs for approval by the Incident Commander
  - Contact insurance carriers to assist in documentation of structural and infrastructure damage and initiate reimbursement and claims procedures
- 

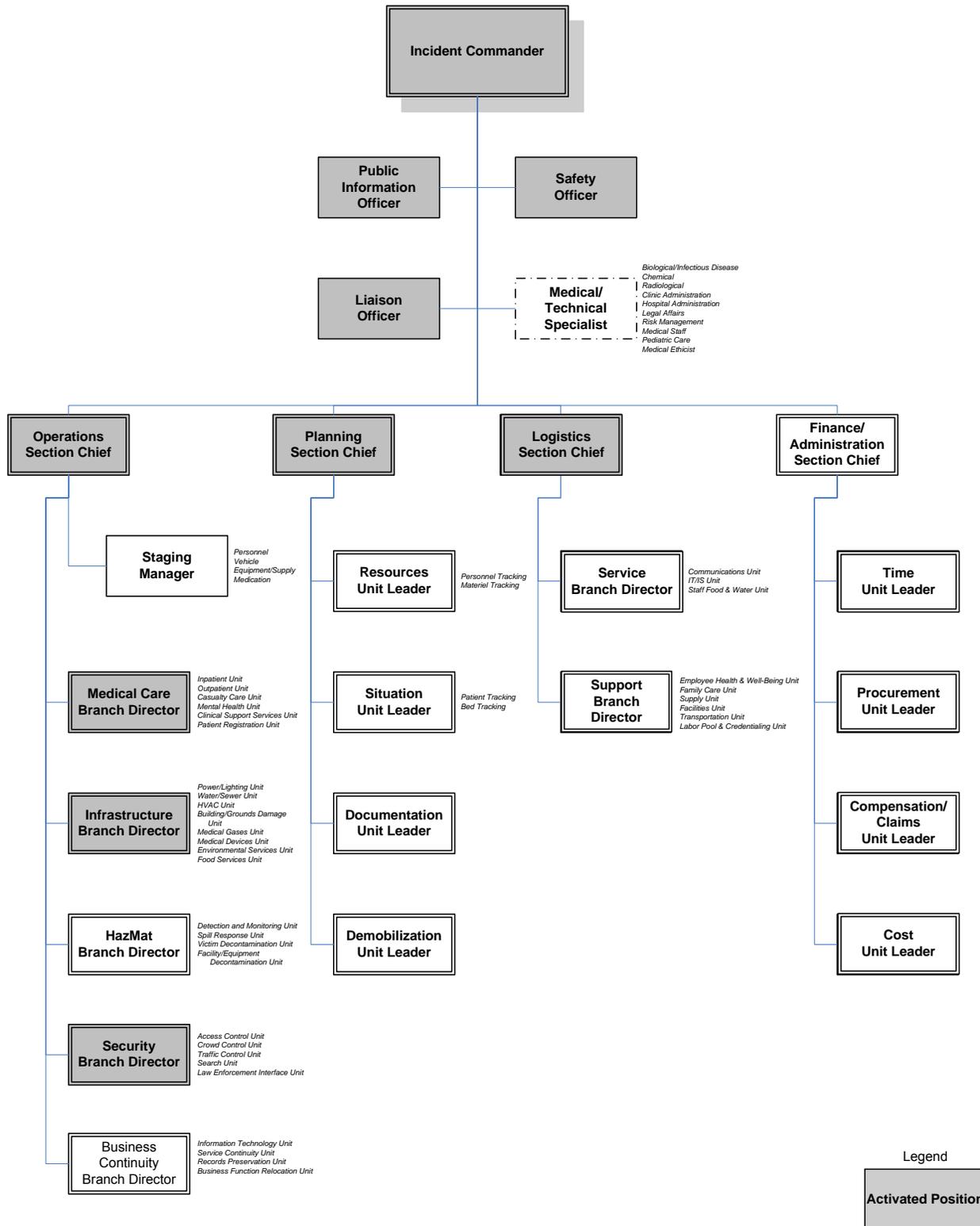
### Documents and Tools

---

- Hospital Internal Utility Failure Plan
  - Emergency Operations Plan
  - Facility Evacuation Plan (as needed)
-

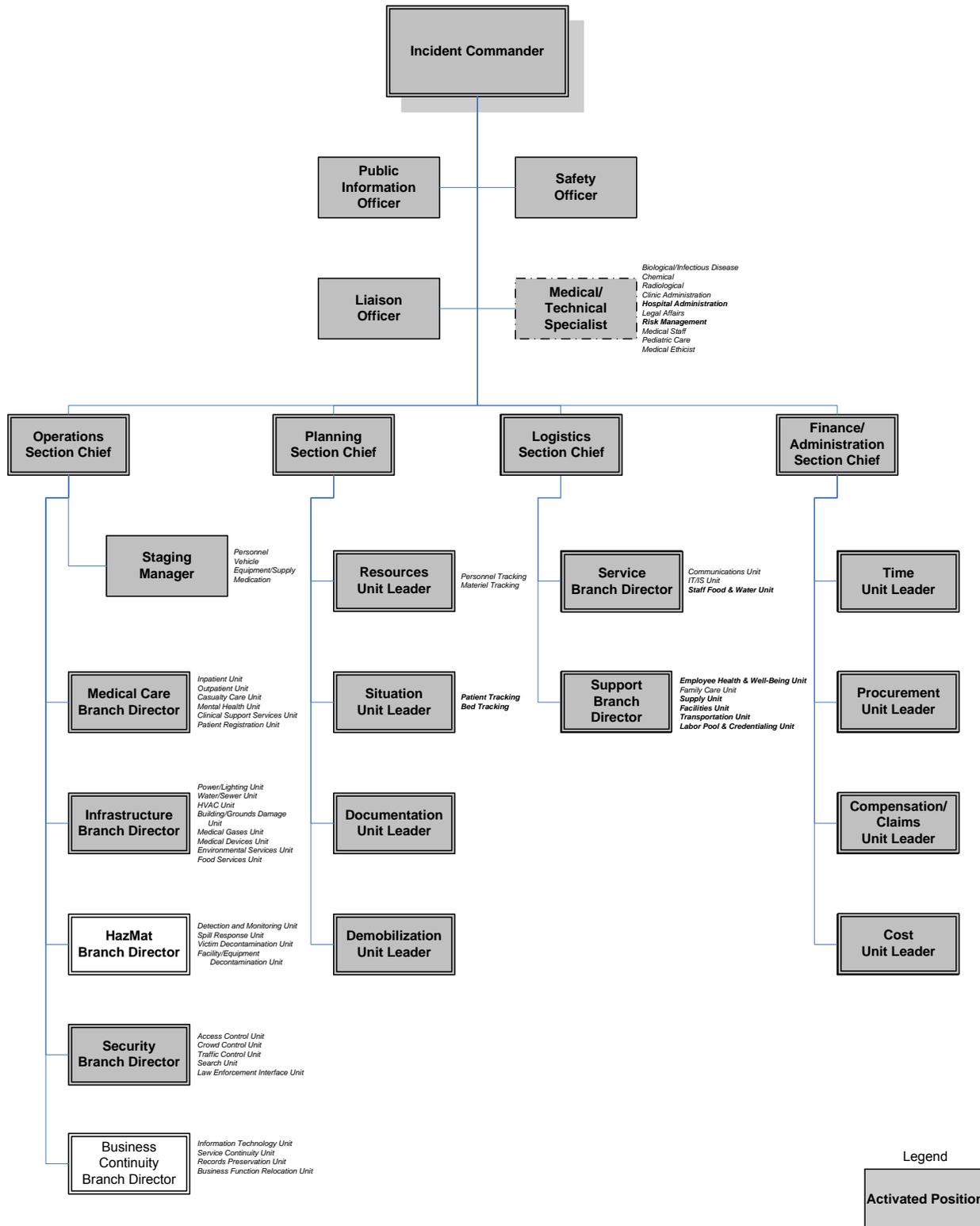
# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT MANAGEMENT TEAM CHART -- IMMEDIATE



# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT MANAGEMENT TEAM CHART – INTERMEDIATE AND EXTENDED



# LOSS OF HEATING/VENTILATION/AIR CONDITIONING (HVAC)

## INCIDENT MANAGEMENT TEAM CHART -- DEMOBILIZATION

