
96 Hour Sustainability Assessment

Hospital Planning Guidance



Updated June, 2018

In 2012, Iroquois Healthcare Association and the Healthcare Association of New York State (HANYs) developed guidance and tools to assist hospitals in meeting The Joint Commission's standard relating to 96 Hour Sustainability. The planning framework is based on "A Process for Determining Resource and Asset Sustainability During Emergencies" developed by the American Society of Healthcare Engineers (ASHE). Hospitals in New York State were reimbursed for conducting an assessment as part of the 2012-13 HPP contract. Based on assessment experience and review of additional practices and resources, Iroquois has updated and supplemented the guidance and tools.

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Introduction

To sustain operations during an extended emergency, hospitals need a process to determine the length of time it can continue to supply necessary services, care, protection, and nourishment to its staff and patients. The 96 Hour Sustainability Assessment process provides a framework to determine sustainability periods and gaps for essential resources, examine mitigation strategies and inform Incident Command during an emergency event.

It is recommended that a multi-disciplinary process be used in each step of the assessment. The Assessment tools will help calculate how long resources will last. Hospitals will then need to determine their mitigation strategies and review related plans based on these calculations and planning assumptions. The tools are scalable and should be modified based on your normal operations and the emergency operational needs of the event. The primary tools used in the Assessment process are:

- **96 Hour Operational Impact Chart** – Visual analysis tracking sustainability periods and gaps that may impact operations.
- **96 Hour Inventory Sustainability Period Calculator** – Calculates the number of hours resources may be sustained based on census and inventory data.

This process, based on “A Process for Determining Resource and Asset Sustainability During Emergencies” developed by the American Society of Healthcare Engineers (ASHE), applies the basic assumption that inventory consumption is linked to average daily census, and that quantitative calculations of how long resources will last may be made based on average daily census, inventory and annual consumption rates. The 96 Hour Sustainability Assessment process will identify:

- How long resources may be expected to last if there is a disruption in supply or system failure;
- Areas where sustainability gaps exist without adjusting consumption, curtailing services, or employing mitigation strategies;
- Areas for improvement in emergency and supply chain plans, and mitigation strategies.

As a detailed analysis is conducted and documented, the hospital learns where it is most vulnerable. Once the vulnerabilities, as a function of time, are known and compared to one another, the hospital identifies the weakest elements of its ability to sustain operations and the point at which sustaining operations becomes unsafe and at which evacuation may be necessary.

The Joint Commission’s 96-Hour Element of Performance [EM.02.01.01] states that hospitals should:

- Identify hospital capabilities and establish response procedures when the hospital cannot be supported by the local community for at least 96 hours (capabilities may include communication, resources, utilities, staff, safety and security);
- Document response procedures (such as maintaining/expanding services, conservation of resources, curtailment of services, supplementing resources from outside disaster area, partial/staged evacuation, or full evacuation, as necessary);

The standard requires that hospitals develop an understanding of their capabilities and limitations in order to make effective decisions concerning progressive curtailment or stopping of services in an organized and prioritized way so as to maintain those services most applicable to the situation as long as possible. This analysis, anticipated actions and emergency inventory should be based on the HVA.

CMS’ Conditions of Participation for Emergency Preparedness (§482.15) require that hospitals’ emergency plans address identified risks including:

- Care-related emergencies;
- Equipment and utility failures, including but not limited to power, water, gas, etc.;
- Interruptions in communication, including cyber-attacks;
- Loss of all or portion of a facility; and

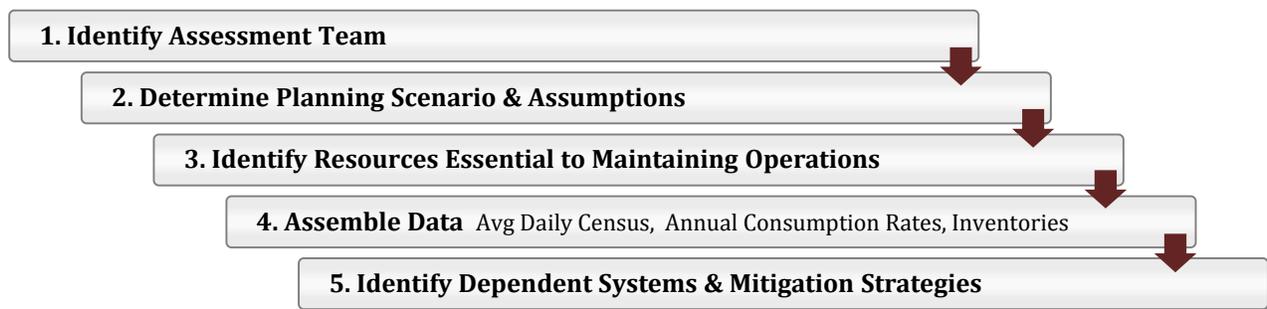
- Interruptions to the normal supply of essential resources, such as water, food, fuel medications and medical supplies.

The emergency plan, policies and procedures must also address:

- Strategies for responding to emergency events identified by the risk assessment.
- Services the hospital has the ability to provide in an emergency; and continuity of operations.
- The provision of food, water, medical, and pharmaceutical supplies for staff and patients, whether they evacuate or shelter in place.
- Alternate sources of energy to maintain:
 - Temperatures to protect patient health and safety, and storage of provisions.
 - Emergency lighting.
 - Fire detection, extinguishing, and alarm systems.
 - Sewage and waste disposal.

When evaluating potential interruptions to the normal supply of essential services, the facility should take into account the likely durations of such interruptions. Arrangements or contracts to re-establish essential utility services during an emergency should describe the timeframe within which the contractor is required to initiate services after the start of the emergency, how they will be procured and delivered in the facility’s local area, and that the contractor will continue to supply the essential items throughout and to the end of emergencies of varying duration.

Preparing to Conduct a 96 Hour Sustainability Assessment



1. Identify Assessment Team

- ❑ **Convene an inter-disciplinary team such as the Emergency Management Committee or Environment of Care Committee.**

Assessment team members should include department heads, and administrative and clinical staff from:

- | | |
|-----------------------------------|---------------------------|
| ▪ Emergency Preparedness | ▪ Security/Safety |
| ▪ Materials Management/Purchasing | ▪ Medical Affairs/Surgery |
| ▪ Plant Operations | ▪ Emergency Department |
| ▪ Environmental Services | ▪ Nursing |
| ▪ Pharmacy | ▪ Respiratory |
| ▪ Dietary/Food Services | ▪ Human Resources |
| ▪ Infection Control | ▪ IT; Telecommunication |

- ❑ **Assessment team members will be responsible for identifying:**
 - ❑ Resources essential to operations and services within areas of responsibility;
 - ❑ Inventory and consumption data for identified resources;
 - ❑ Conservation and mitigation strategies.

2. Determine Planning Scenario & Assumptions

❑ Select a planning scenario for which to conduct the assessment.

You may choose a scenario that is high on your HVA and would likely impact the normal consumption and supply of resources (e.g. severe weather, pandemic, etc.) or use an all-hazards approach.

❑ Apply reasonable assumptions based on the scenario.

Below are examples of reasonable assumptions that may be applied to weather scenario:

- Communications networks across the area are effected;
- Electrical power is out in the community;
- Sewer systems become non-functional due to loss of power to sewage lift stations;
- Emergency generators at the inpatient facility are functional and running;
- Many employees are unable to get to work due road conditions;
- Assume normal levels of resources at onset of event;
- Some influx of patients.

3. Identify Essential Resources

❑ Distribute the 96 Hour Operational Impact Chart to Assessment Team.

❑ Determine the resources essential to maintaining operations during the scenario.

It is recommended resource determinations be made or reviewed by the Assessment Team or other multi-disciplinary committee. The Chart is pre-populated with some generally applicable resources that the Assessment Team should modify based on facility operations and the scenario. You may delete, add and itemize this list.

4. Assemble Data

➤ For consumable resources which may be quantified (i.e. counted) the following data will be required in order to determine Sustainability Periods:

- Average Daily Census
- Annual Consumption Rate of Resources
- Actual Inventory Quantity of Resource

A general rule is that if the resources are consumable and can be counted (quantified), the Calculator may be used to determine sustainability. Resources pre-populated in Bold are considered consumable. Determining the consumption rate of essential resources, including staffing, depends on the number of individuals (patients, support staff, and visitors) in the facility and the quantities of resources available. Accomplishing this requires an Average Daily Patient Census and a Resource Inventory. "Consumption" includes materials or staff utilized in providing patient care. Average baseline information on patients receiving care, and resources consumed by these patients, including staff and visitors associated with the patients, is critical. Once these key elements are determined, the organization can develop a decision process for sustaining services during an event.

➤ For resources which are non-consumable or for which consumption rates cannot be quantified, reasonable planning assumptions should be applied by the Assessment Team.

Example: Elevator is either working or not working, dependent on Normal or Emergency Electrical System.

➤ If the Sustainability Period of a resource has been determined using other quantitative methodology, document the data and calculations for review by the Assessment Team.

❑ Identify the hospital's Average Daily Census

The Patient Census should account for all patients, including those in the ED, surgery, outpatient, and other departments proving care over a 12-month period. Census data may be listed by category or in total. Categories may be changed to reflect how census data is collected and defined by facility.

Patient Census <i>Licensed beds = 200</i>		
Patient Type	Annual	Daily
Adults	43,435	119
Nursery	2,190	6
Outpatient	108,410	484
ED	58,400	160
Surgeries	10,950	30
Other	7,300	20
Total	280,185	719

❑ Determine Annual Consumption Rate of Resources

Assessment team members should assemble Annual Consumption Rate data for essential resources within their department or area of responsibility. Because there may be seasonal variances in the consumption of certain resources, the Annual Consumption Rate is used to calculate a baseline Average Consumption Rate (units/day).

❑ **Conduct an Inventory of Resources**

This may be an actual inventory conducted within a department, or may be drawn from a centralized inventory data system. It should reflect typical inventory levels.

5. Identify Dependent Systems and Mitigation Strategies

❑ **Identify mitigation and conservation strategies that may extend sustainability periods and lessen the impact on emergency operations.**

Mitigation strategies may include:

- Curtailment of services; patient discharge;
- Conservation of resources;
- Plan for alternative methods to meet operational needs (gas generators, waste management)
- Identify additional resources that can be obtained from within the immediate community

❑ **Identify dependent systems and resources.**

Dependencies should be considered by the Assessment Team when making sustainability determinations. Unavailability of certain resources or cascade failures may expand and escalate operational impacts.

Example – Emergency Power: What are the dependent systems? What mitigation strategies may be used?

❑ **Identify planning assumptions and considerations which may affect availability and consumption of resources.**

Planning assumptions and additional considerations that may affect services and operations of other departments should be reviewed by the full Assessment Team when making sustainability determinations.

Conducting a 96 Hour Sustainability Assessment



1. Establish Planning Assumptions

❑ **The following assumptions should be applied in conducting the Assessment:**

- The event will interrupt supplies and services for 96 hours or more and impact public services.
- Support from outside the community will not be available; surrounding areas may be impacted.
- Support from within the community will be impacted (i.e. normal supply chains and vendor operations will be impacted).
- Resources that cannot be replenished will need to be conserved; alternative methods will be needed to meet operational needs (i.e. gas generators, waste management).
- Multiple scenarios or cascade failures may escalate operational impacts.
- Other healthcare services may be curtailed/closed.
- Medical surge and staff shortage strategies may need to be implemented.
- May need to shelter in place.

Apply additional assumptions based on the scenario.

Example - During a severe weather event, normal power and phone service may be impacted.

2. Determine the resources essential to the facility's operation.

List essential resources in Column B of the 96 Hour Sustainability Chart.

Column B is pre-populated with generally applicable resources which are categorized by the Joint Commission's six Critical Functions of Environment of Care (Column A):

1. Communicating during emergency conditions.
2. Managing resources and assets during emergency conditions.
3. Managing safety and security during emergency conditions.
4. Defining and managing staff roles and responsibilities during emergency conditions.
5. Managing utilities during emergency conditions.
6. Managing clinical activities during emergency conditions.

The pre-populated resources may or may not be essential to your facility's operation during the selected emergency event. Pre-populated resources may be deleted, supplemented, itemized or otherwise changed to best reflect your operational needs, and may also be categorized differently.

3. Determine the Sustainability Period of Essential Resources

Sustainability Periods may be calculated using one of methodologies outlined below:

Use 96 Hour Inventory Sustainability Period Calculator for consumable resources

The Calculator tool provides a quantitative methodology for determining Sustainability Period of consumable resources (*see [Calculator Instructions Tab](#)*). The following data is needed:

- Average Daily Census
- List of Essential Resources
- Annual Consumption Rate of Resources
- Actual Inventory Quantity of Resources

1. **Enter Average Daily Census** in [Tab A: Cell J14](#). Average Daily Census will automatically populate into [Calculator Tab Cell 2C](#).
2. **List Essential Resources** in [Calculator Tab](#). The pre-populated resources correspond to those in the [Emergency Operations Chart Tab](#).
3. **Enter Annual Consumption Rate** for each Resource in [Annual Consumption \(Column D\)](#). The Average Consumption Rate will automatically calculate and populate in [Column E](#).
4. **Enter Actual Inventory Quantity** for each resource. Enter the inventory data into the [Actual Inventory Quantity \(Col. F\)](#). The [Inventory Sustainability Period/Hours \(Col. G\)](#) will automatically calculate and populate.
5. **Transfer Sustainability Periods to Chart** Transfer data from [Inventory Sustainability Period/Hours \(Column G\)](#) to Chart, using color coding as described in its instructions.

Example: If Linen Supplies has a Column F value of 36 hours, Color code that resource row Green for through 36 hours. The time period to be coded Yellow and Red is determined using reasonable assumption process.

Use other quantitative methodologies for consumable resources.

If the Sustainability Period has been determined using another quantitative methodology, this data and calculations should be reviewed and discussed by the Assessment Team.

Apply reasonable assumptions when resource cannot be quantified

The Sustainability Period of certain non-consumable resources such as telephone service and normal electrical power cannot be determined using the quantitative methods above. The Sustainability Period for such resources should be determined using reasonable assumptions based on the planning scenario.

Example: Elevator – It is either working or not working, dependent on normal and emergency power systems.

4. Color Code 96 Hour Operational Impact Chart

❑ Use Sustainability Period results from the Calculator, other quantifiable calculations, and/or reasonable planning assumptions to color code the 96 Hour Operational Impact Chart:

Green Resources are known or calculated to be available with no impact on normal operations. All patient, staff and visitor services can continue without any discernible impact or change.

Example: Potable Water-Quantitatively determined to be 72 Hr Sustainability Period. Color code Green Hour 0–72.

Yellow Potential exists for impact on normal operations. Implement appropriate Emergency Operations Plans to mitigate the impact of a sustained event. Indicates that some patient, staff or visitor services may be reduced or suspended. It is likely that elective surgeries may be affected and that some or all outpatient or non-urgent services may be temporarily suspended. Visitors/ visiting hours may be limited. Conservation measures or other contingencies may be required. Will need to obtain needed resources and/or implement effective conservation measures and contingencies to sustain essential services or implement diversion and partial or total evacuation if indicated.

Example: Elevator - Sustainability Period is dependent on Emergency Electrical System. Determine that it can be shut down with minimal impact on normal operations for duration of event. Color code Yellow Hour 0 – 96.

Red Normal and emergency operations are significantly impacted. All internal resources and strategies to mitigate impact have been depleted. May need to consider denying incoming visitors/patient admission. All but the most critical, life-saving procedures will be discontinued. Partial/total evacuation in progress. Patients to be transferred to other facilities.

Example: Potable Water - No mitigation identified past 72 Hour Sustainability Period. Color Code Red Hour 74 – 96.

5. Identify Sustainability Gaps & Mitigation Strategies

❑ Identify conservation and mitigation strategies that may extend sustainability.

Departments should develop consumption and operational adjustment measures for items on the inventory list.

❑ Estimate the period that mitigation strategies may extend the ability of the facility to function under emergency operations by applying reasonable assumption.

❑ Review plans and mitigation strategies for areas coded “Red”.

- Can identified resource inventory be stockpiled or increased prior to an anticipated event?
- What consumption adjustments and operational changes will be necessitated during an event?
- Are response expectations of your vendors defined and realistic response capabilities understood?
- Ensure that supplies and medications are available from multiple sources.

Appendix:

1. 96 Hour Sustainability Assessment Tools & Documents

96 Hour Operational Impact Chart

Visual analysis of sustainability periods and gaps that may impact operations.

96 Hour Inventory Sustainability Period Calculator

Calculates the number of hours resources may be sustained, based on census and inventory data.

A Process for Determining Resource and Asset Sustainability During Emergencies

Article outlines sustainability process developed by American Society of Healthcare Engineers (ASHE).



Sustainability Chart & Calculator

System Failures Chart: Guidance for Incident Command

Customizable template for incident command and department heads to use in planning for various hospital system failures.



System Failure Chart

Critical Resources & Assets Table: Strategies for Extension

Customizable table to identify strategies and vulnerabilities for specific critical resources.



Critical Resources & Assets Table

2. Additional Resources

Supply Chain Disaster Preparedness Manual

CDC manual addresses supply chain preparedness. www.ahrmm.org/resources/tools/supply-chain-disaster-preparedness-manual.pdf

Medical-Surgical Supply Formulary by Disaster Scenario

Developed by the Association for Healthcare Resource & Material Management, Health Industry Distributors Assoc., and the Health Industry Group Purchasing Assoc. www.ahrmm.org/resources/tools/disasterformulary.pdf