

Duke University Hospital

Utility Management Plan

2025

Purpose:

Utilities systems provide essential services that are required by Duke University Health System to support its mission of top-quality patient care, excellence in teaching and advances in research, while utilizing its resources in an efficient and cost-effective manner. This document identifies the scope and overall organization of the Utility Management Plan utilized by the Engineering and Operations Department (E&O) to assure that these essential services are always available.

Engineering and Operations provides Utility Management services to Duke University Hospital Duke Clinics and Duke Owned Offsite Ambulatory Care locations.

Engineering and Operations provides Utility Management consultative services, as requested, to community-based Duke Clinics and leased facilities.

Utility Systems Inventory:

Because Duke University Hospital uses Joint Commission accreditation for deemed status purposes, all operating components of the utility systems are included in the inventory. This inventory is maintained electronically in the computerized maintenance management system (CMMS).

Identification of High-Risk Operating Components:

Operating components of the utility systems that are identified as High Risk are categorized in the CMMS as “High Risk.”

The E&O leadership team identifies which components are considered high risk. Examples of High-Risk components include, but is not limited to, Medical Gas and Vacuum systems, Emergency Power Supply Systems, Fire Alarm systems, Fire Suppression systems, etc.

Certain components are categorized as “Infection Control.” These components are considered a subset of High Risk. Examples of Infection Control components include isolation exhaust fans, AHUs serving Bone Marrow patient rooms, AHUs serving ORs, HEPA filters, backflow preventers, sterilizers, etc.

All other components on the inventory are categorized as “Non-High Risk.”

Maintenance and Testing of Utility Systems / Components:

Preventive maintenance activities and intervals and routine maintenance records are kept in the computerized maintenance management system (CMMS). This system provides a variety of reports to assist the managers, foremen, and mechanics in managing, evaluating, and improving utility systems.

Systems are installed and tested according to the manufacturer's recommendations, codes, and standards prior to use or after major repairs or upgrades.

Equipment and components that are not subject to federal law, state law, or Medicare Conditions of Participation are included in the Alternative Equipment Maintenance program.

Preventive maintenance activities are determined and scheduled utilizing manufacturer recommendations, industry standards, facility experiences, and other resources such as the American Society for Healthcare Engineering book "Maintenance Management for Health Care Facilities." Alternate strategies, activities, and intervals shall not decrease the level of safety or reliability of operating components of the utility systems. Alternate strategies, activities, and intervals shall consider such parameters as seriousness and prevalence of harm, likelihood of failure, failure history, availability of back-up or alternative equipment, maintenance requirements, etc.

Fire Alarm systems and Fire Suppression systems are tested and maintained in collaboration with the OESO-Fire Safety Division.

Appliances such as computers, microwaves, TVs, coffee pots, copiers, etc. are not part of the Utility Management Program. When purchased, appliances should be UL Listed or have equivalent approval. If appliances do not work properly, have frayed cords, or otherwise appear to be damaged, they should be identified for repair/replacement by the appropriate department. Employees and/or Departments that have questions about the safety or performance of such equipment may contact Engineering and Operations.

Utility System Disruptions:

E&O has specific policies/procedures for responding to utility system disruptions. These policies/procedures are available online and via our shared drive for E&O staff.

Water-borne Pathogenic Biologic Agents:

- **Domestic Hot Water:**
In newer installations, treatment systems are reviewed, evaluated, and installed based on the best application for the use. In existing systems, E&O works in conjunction with Infection Prevention and OESO to respond to any potential issue that may be related to water-borne pathogenic biological agents.
- **Process Hot Water:**
The temperature of processed hot water systems is kept at or above 140°F to prevent the growth of pathogenic biological agents.
- **Cooling Tower:**
E&O utilizes a 3rd party company to treat and monitor water chemistry to prevent pathogenic biological agents from growing in the cooling towers. The 3rd party also cleans and disinfects the cooling towers annually. There are no cooling towers serving inpatient facilities.

Airborne Contaminants:

Ventilation measurements are taken in Protective Environments (PE), Airborne Infection Isolation (AII) rooms, operating rooms, and other critical care areas by a 3rd party annually.

HEPA filters are performance-tested annually by a 3rd party.

Measurements are taken regularly by E&O in other areas requiring special ventilation such as Soiled Hold Rooms, Special Procedure Rooms, Pharmacies, Pathology, etc.

Temperature and humidity levels are monitored via the building automation system. When alarms are activated, BAS Operators notify the appropriate contacts for action.

Healthcare Environmental Oversight Work Group (HEOWG):

The HEOWG committee provides oversight to the monitoring of environmental conditions within building systems to minimize risk and optimize performance in ensuring the safety of patients in their environment. This oversight includes items such as temperature, humidity, water management, air exchange rates, etc. This subgroup of the Safety Committee is comprised of representatives from Administration, Engineering & Operations, Perioperative Services, Sterile Processing, Occupational & Environmental Safety, Infection Prevention, and Accreditation.

Utility System Distribution Plans:

Drawings, specifications, and O&M manuals are kept in the E&O Administration office, the Facility Planning, Design and Construction office, and are available online via secured intranet. System specific manuals and drawings are kept in the associated maintenance shops and online.

Facilities Services Work Group (FSWG):

Engineering and Operations actively participates in the Facilities Services Work Group, which provides oversight and guidance to the construction and maintenance related activities and their impact on patients, visitors, and staff. This subgroup of the Safety Committee is comprised of representatives from Administration, Engineering & Operations (Maintenance and In-House Construction), Fire Safety, Facilities Planning Design & Construction, Duke Police, Occupational & Environmental Safety, Infection Prevention, and Emergency Management.

Incident Reporting:

Incident reports are completed on situations that resulted in injury or had a significant potential to cause an injury, to patients or visitors. These reports are sent to Risk Management for evaluation. Risk Management sends incident reports that are applicable to the facilities to Engineering and Operations. Engineering and Operations management reviews pertinent reports to identify changes that may be required to prevent a reoccurrence of the situation.

In addition, E&O tracks utility related incidents through its CMMS and reports these monthly to the DUSC.

Utility Management Plan Evaluation:

The E&O leadership team will evaluate the Utility Management Plan annually for its scope, objectives, performance, and effectiveness. Any changes in scope will be addressed during the annual update of the Plan, and any changes in the range of application or interaction will be incorporated into the updated Plan. Annual planning objectives will be developed through interactions with DUSC members and the Hospital Administration. These objectives will address the primary operational initiatives for maintaining and enhancing the safety of the Environment of Care. A year-end summary of the effectiveness in accomplishing these objectives will also be presented to the DUSC. The performance of the Plan will be assessed through progress in achieving the Performance Improvement Standards defined within the Plan. The annual evaluations, updates, and planning efforts will be presented for DUSC review and action during the first quarter of the new calendar year. This information will be provided to the DUH Leadership and the DUHS Board of Directors through routine reporting channels.

Performance Improvement:

Engineering & Operations is responsible for the development of Performance Improvement (PI) indicators which are based on priorities identified by E&O and the DUSC. The DUSC has the responsibility for approving indicators, including monitors and thresholds. All PI activities and indicators are routinely reported to the DUSC. This information is provided to the DUHS Board of Directors through normal reporting channels. All elements of the PI process are subject to change at any time based on institutional experience, regulatory change, or administrative input.