Purpose:

Utilities systems provide essential services that are required by Duke University Health Systems and Duke University Medical Center 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 and Duke Clinics.

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

Utility Systems Inventory  (EC.02.05.01 EP2):

Rather than select utility components for inclusion in the program based on set criteria, Engineering & Operations includes all utilities in the CMMS. The following is a list of systems/components covered by the Utility Management Plan:

I. Life Support Systems
   A. Medical Gas Systems (Air, Oxygen, Nitrous Oxide, Nitrogen, Carbon Dioxide)
   B. Medical Vacuum Systems
   C. Emergency Power Supply Systems

II. Infection Control Systems
   A. Sterilizers and Related Equipment
   B. Ventilation and exhaust systems, high efficiency and other filtration
   C. Backflow preventers
   D. Water treatment

III. Environmental Support Systems
   A. Air Handling Units
   B. Exhaust Fans
   C. Chillers/Chilled Water Systems
   D. Heat Exchangers
   E. Cooling Towers
   F. Plumbing Systems
   G. Trash and Linen Systems
IV. Equipment Support  
A. Electrical Distribution System  
B. Pneumatic Tube System  
C. Elevators / Escalators  
D. Sprinkler Systems  
E. Refrigeration Equipment  

V. Communication Systems  
A. Patient Call Systems (Hill Rom call systems are the responsibility of DHTS)  
B. Fire Alarm Systems  
C. Building Automation Systems  
D. Medical Gas Alarm Systems  
E. Telephone/Paging/Radio Systems (Maintained by OIT/DHTS)  


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.  

Preventive maintenance activities are determined and scheduled utilizing manufacturer recommendations, industry standards, and facility experiences, not to exceed annually.  

Systems are installed and tested according to the manufacturer’s recommendations, codes and standards prior to use.  

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.  

Water-borne Pathogenic Biologic Agents  (EC.02.05.01 EP14)  

- 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 process 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 the water chemistry to prevent pathogenic biological agents from growing in the cooling towers. The 3rd party also cleans and disinfects the cooling towers annually.

Decorative Fountains:
E&O utilizes a 3rd party company to treat and monitor the water chemistry to prevent pathogenic biological agents from growing in decorative fountains. E&O cleans and disinfects decorative fountains on a routine basis.

Airborne Contaminants (EC.02.05.01 EP15)
Ventilation measurements are taken in Protective Environments and Airborne Infection Isolation (AII) rooms 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, Sterile Supply Rooms, Pharmacies, HLD locations, Pathology, etc.

Utility System Distribution Plans (EC.02.05.01 EP16)
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.

Utility System Disruptions (EC.02.05.01 EP9):
E&O has specific policies/procedures for responding to utility system disruptions. These policies/procedures are available online for all E&O staff.

Facilities Services Work Group (EC.02.06.05)
Engineering and Operations actively participates in the Facilities Services Work Group, which provides oversight and guidance to the construction related activities and their impact on patients, visitors, and staff.
Incident Reporting (EC.04.01.01 EP1 and EP 11):

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 computerized maintenance management system (CMMS) and reports these monthly to the DUSC.

Utility Management Plan Evaluation (EC.04.01.01 EP15):

The Director, E&O, Assistant Director – Hospital Division, E&O, and Assistant Director – Clinic Division, E&O 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 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 (EC.04.01.03 EP3, EC.04.01.05 EP1, EP2, and EP3):

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.