

Emergency Support Function (ESF) #14c: UTILITIES: Chilled Water

ESF Activation Contact: Cornell Facilities Customer Service (607)255-5322	
Primary Department	Cornell Facilities Services: Utilities PH: (607) 255-5322 Contact: W. S. (Lanny) Joyce
	Cornell Grounds Department PH: (607) 255-5322
	Cornell Shops PH: (60) 255-5322
External Agencies	NYSEG for electric service to Lake Source Cooling 18 Link Drive, Kirkwood Industrial Park Binghamton, NY 13902-5224 PH: 1-800-572-1131

I. Purpose:

- a) This ESF lists the internal and external departments responsible for chilled water generation and distribution on campus.
- b) This ESF lists the internal and external departments responsible to provide and coordinate resources (personnel, equipment, facilities, materials and supplies) to support chilled water and distribution needs during an emergency or disaster.
- c) This ESF encompasses chilled water, including the Central Energy Plant (Chilled Water Plant 3) and Lake Source Cooling Plant (Chilled Water Plant 4).

II. Scope:

- a) May include the following, but is not limited to:
 - i) Infrastructure protection and emergency repair
 - ii) Damage assessments
 - iii) Emergency restoration of critical public services and facilities.
 - iv) Repair and maintenance of chilled water production and distribution systems
 - v) Provide utility infrastructure related engineering support
- b) May be activated by the Incident Commander to respond to incidents that are beyond the capabilities of the initial emergency response actions.

- c) May be activated to respond to incidents that overwhelm normal Incident Command response actions.

III. Situation

- a) Emergency Conditions and Hazards
 - i) The chilled water production system consists of the Lake Source Cooling (LSC) facility (Chilled Water Plant 4), Chilled Water Plant 3 (CWP3) (part of the Central Energy Plant complex) and the 4.4 million gallon chilled water thermal storage tank (TST). Collectively, these facilities comprise a state of the art facility with high energy production systems such as high voltage (13,200 , 480, 208 volts), high speed rotating equipment, high pressure water and large quantities of refrigerant (R-134a).
 - ii) LSC, which supplies all of the chilled water (except for peaking hours) for campus and the Ithaca high school, is fed electrically by an off campus electrical feed from NYSEG. CWP3 chillers provide peaking cooling when LSC can not meet campus load (and provide backup in the event that LSC is out of service) are electrically fed by the campus electrical system. Without electricity chilled water cannot be produced or distributed.
 - iii) The thermal storage tank (TST) is a 4,400,000 gallon tank which stores chilled water produced during the nighttime for use during hot days or during production outages.
 - iv) The distribution system consists of a supply and return system consisting of piping as large as 42" diameter. The system is looped with appropriate valving in most situations to provide alternative feeds and sectionalize certain parts of campus. Campus pressures are up to 150 psig and pressures off campus and downtown are up to 250 psig. The total volume of water in the piping system is 1.5 million gallons on campus and 1.5 million gallons off campus (below Libe Slope).
 - v) Cornell University may periodically experience emergency and disaster situations that will require restoration of essential services. Potential emergencies and disasters include both natural and human-caused incidents.
 - vi) The chilled water system is the sole source of cooling for all of campus. Loss of the facility leaves the entire campus without cooling. Impact on campus operations is fractions of hours to multiple hours depending on the weather and type of facility.

- vii) The most critical facilities fed by the chilled water system are campus computer infrastructure in support of phone and web services and living research such as animal rooms and plant growth chambers.
- viii) Depending on the season, CEP electric generators can feed all or part of the chilled water system in CWP3.
- ix) Cornell University may periodically experience emergency and disaster situations that will require response by University resources and outside agencies and the restoration of essential services. Potential emergencies and disasters include both natural and human-caused incidents.
- x) See Cornell's Risk Assessment for a description of potential emergencies.

IV. Assumptions

- a) Initial emergency response capabilities may be inadequate to manage the incident
- b) University resources will be quickly overwhelmed.
- c) Communication systems may fail during a major incident.
- d) Backup systems will be available but may take time to activate.
- e) Shortfalls can be expected in both support personnel and equipment.
- f) State and federal assistance may not be immediately available.

V. Concept of Operations:

- a) General
 - i) The Cornell University Emergency Operations Plan provides overall guidance for emergency operations.
 - ii) ESF Annexes define roles and responsibilities, planned concept of operation, and internal and external capabilities and resources.
 - iii) ESF annexes are designed to provide basic information to include points of contact in case additional resources or expertise is needed at the incident scene or on an Incident Management Team.
- b) Organization
 - i) National Incident Management System concepts will be used for response to all incidents.

- ii) Incident or Unified Command will be used by responding departments.
 - iii) When requested, ESF personnel will report to the Incident Command Post or other location, or will participate as members of an Incident Management Team.
- c) Notification
- i) To report problems with Cornell Campus Utility Systems contact Cornell IPP Customer Service Center at (607)255-5322.
 - ii) Campus incidents involving requests for ESF-14c assistance are to be reported to the Cornell University Police Department (CUPD) Dispatch Center by calling 911 from a campus phone or 607-255-1111 from an off campus phone.
 - iii) The CUPD Dispatch Center will notify Cornell Facilities Customer Service Center (607)255-5322 of the incident or request for assistance.
 - iv) The Cornell IPP Customer Service Center or EMCS Operator will notify appropriate Utilities personnel.
 - v) Requests for additional resources shall occur under the authority of the Incident/Unified Command.
- d) Direction, Control and Authority to Act
- i) The Incident Command System (ICS) is used by University personnel to respond to emergencies and incidents.
 - ii) During the emergency response phase, all responders will be under the direction and control of the incident's Incident/Unified Command.
 - iii) Responders reporting to the incident scene will report to the Incident Commander at the Incident Command Post unless otherwise directed by the Incident Commander.
 - iv) The Incident/Unified Command is authorized to take actions necessary to contain and control the incident to protect and reduce impact to lives, research, property, the environment, and campus operations.
- e) Actions
- i) Preparedness
 - (1) Cornell Utilities shall develop and maintain response plans and procedures, a cadre of trained personnel, equipment and supplies to respond to and manage incidents that impact campus utility service.

- (2) Cornell Utilities shall maintain continuity of operation (COOP) plans for the scope of capabilities identified in the ESF. Service recovery priorities and resources shall be identified in the C-COOP planning tool and further detailed through plans and procedures.
- (3) Cornell Utilities shall develop and maintain a list of campus, community, and vendor resources that could be requested during an emergency.
- (4) Cornell Utilities shall maintain a list of personnel (at least one primary and one back-up) that can be called to serve on an Incident Management Team to manage utility related support functions.
- (5) Develop procedures to document costs for any potential reimbursement.
- (6) Participate in exercises and training to validate this annex and any supporting plans and procedures.

ii) Response

- (1) Manage impacts to the campus chilled water generation and distribution system including but not limited to:
 - (a) Obtaining, prioritizing and allocating equipment and resources.
 - (b) Providing damage assessments of the utility systems.
 - (c) Identifying and procuring services and equipment from private contractors and outside companies.
 - (d) Prioritize restoration of utility services to campus facilities.
- (2) When requested, provide personnel to respond to the incident command post or other location to serve on an Incident Management Team to manage utility related support functions.
- (3) In conjunction with the Incident Commander, coordinate emergency information for public release through ESF-17 Communications.

iii) Recovery

- (1) Prioritize and implement the restoration of utilities to critical university facilities and services, including but not limited to: chilled water service.
- (2) Coordinate assistance as needed by the Incident Commander, Incident Management Team, and/or Incident Executive Leadership Team.

- (3) Ensure that ESF-14c personnel, departments or agencies maintain appropriate records of costs incurred during the event.

VI. Responsibilities

- a) Primary Department: Cornell IPP: Utilities
 - i) Responsible for the supply of chilled water (cooling) to all on campus facilities which are centrally cooled.
 - ii) Serve as the lead agency for ESF-14c supporting the response and recovery operations for chilled water supply after ESF activation.
 - iii) Develop, maintain, and update plans and procedures for use during an emergency including maintaining the Chilled Water Load shedding program in collaboration with Facilities Management..
 - iv) Identify, train, and assign personnel to serve as ESF-14c representatives at an Incident Command Post or on an Incident Management Team (IMT) when a University IMT is assembled
General Responsibilities
 - (1) Provide technical Information and direction for any work needed for the chilled water production and distribution systems.
 - (2) Assist with and guide shutdown and startup of all system components
 - (3) Assist with all recovery efforts to assure safe and reliable operation.
 - (4) Provide operations personnel and maintenance personnel during emergencies.
- b) Support Departments
 - i) Develop, maintain, and update plans and procedures for use during an emergency.
 - ii) Identify, train, and assign personnel to assist the primary department at the Incident Command Post or on the Incident Management Team as needed.
 - iii) Support the primary department as needed.

VII. Capabilities

- a) Refer to Cornell Utilities' Emergency Plans

VIII. Resource

- a) Refer to Cornell Utilities' Emergency Plans

IX. Policies and Procedure

- a) LSC and CWP #3 Emergency Plans and Procedures
- b) Cornell Utilities' Emergency Plans

X. Attachments

- a) None

Plan Review and Revision History

Summary of Changes	Date	Completed By
Version 2.0 updates	9/12/2017	Office Emg. Mgmt.