INTRODUCTION

- General definition and purpose of curtailment and this guide. This guide is provided as a resource for chilled water curtailments. Chilled water (CW) is produced and distributed from the Central Energy Facility (CEF) on campus. Chilled water is used by many buildings on campus to provide building space and equipment cooling. Not all buildings are supported by campus chilled water. Check with your supporting facilities department to see if your building is connected to the chilled water system. Chilled water is used across many areas of Stanford University, such as the adult and children hospitals, the academic campus, athletics, School of Medicine and Residential & Dining Enterprises. It is recommended that programs create action plans to be implemented when notified of a chilled water curtailment to reduce the impacts to programs and loss of equipment. Those plans should include internal communications within the program for sharing knowledge of the curtailment and actions to be taken.
- Curtailment reasons and potential for rapid escalation. The need to implement a chilled water curtailment can be caused by various situations or conditions. Some of the reasons are equipment problems or system failures, extreme temperatures and high humidity conditions or distribution problems. There are seven (7) stages of curtailment in the plan. During periods of curtailment, the situation is often very dynamic. The response may not always be systemic beginning at stage 0 and progressing sequentially through the specified seven stages. Changing situations may require rapid escalation in curtailment stage levels with limited notice. Curtailments consider actual weather as well as forecasted conditions, production capacity of the plant at the time of the curtailment against the system demands of the users of chilled water.
- General methodology and prioritization. All buildings that are connected to chilled water are evaluated to determine the usage need. The needs range from comfort cooling to patient care. The needs are broken down into seven (7) stages (defined below). Many of our buildings are diverse in function and may be affected at different stages of a curtailment.
- Communications. In the event of a chilled water curtailment, every effort will be made to communicate with chilled water customers as quickly as possible. Once we are aware of a problem we will communicate information to the Stanford community using the AlertSU system. At the implementation of a stage 1 curtailment the AlertSU system will be used to make the initial notification via email. The message will also be posted on the emergency.stanford.edu web site. At each change in curtailment stage a new AlertSU message will be sent out specifying the stage and an updated message will be posted to the emergency.stanford.edu web site. This guide will be posted to a web site and a link will be provided in the communications.

CURTAILMENT STAGES DEFINED

STAGE 0

Stage 0 (Soft Curtailment) - Adjustments to reduce chilled water use without directly impacting the functionality of campus facilities. Examples include temporary adjustments to space cooling temperatures while staying within campus guidelines, such as setting the thermostat to 76F in a space where the occupants may have it set at 72F.

- Examples of impact: There will be no notification sent to occupants at this stage. Occupied space will become warmer than usual.

STAGE 1

Stage 1 (Comfort Cooling) – Allowing temperatures in occupied spaces, except those affecting teaching, research, commercial operations, animal life, or patient care to exceed campus guidelines up to and including inhabitability.

- Examples of impact: Occupied space will become warmer than usual.
- Potential actions to minimize impact: Make sure your curtailment contingency plans are enacted. Alert other program members of the chilled water curtailment. This may include selectively turning off heat producing office equipment to beginning shutdown of research equipment in preparation for further curtailment stage escalation.
- Potential actions to support curtailment: Monitor web site for updated information. Make sure others in your program are aware of the curtailment. Let your supporting facilities department know of special events for consideration. Turn off office equipment to include lighting. Consult with your building manager and management for next steps. Refer to Human Resource guidelines & policies.

STAGE 2

Stage 2 (Temporary Disruption of Teaching, Research, and Commercial Operations) - Allowing temperatures in teaching, research, or commercial operations spaces to exceed campus guidelines up to and including inhabitability for a limited time such as several hours on one or more particular days.

- Examples of impact: Longer duration of warm temperatures in campus building spaces. Chilled water temperatures may increase above normal system temperatures.
- Potential actions to minimize impact: Consider shutdown of research equipment that has a heat load and/or uses chilled water. Secure chemicals. Limit opening of refrigerator/freezer equipment.
- Potential actions to support curtailment: Turn off equipment that produces heat or uses chilled water. Continue to consult with your building manager and management for actions to be taken.

STAGE 3

Stage 3 (Long Term Disruption of Teaching, Research, and Commercial Operations) - Allowing temperatures in teaching, research, or commercial operations spaces to exceed campus guidelines up to and including inhabitability for an extended time period such as 24 hours per day for several days or more.

- Examples of impact: Loss of data and need for re-calibration of equipment.
- Potential actions to minimize impact: Secure research area for severe reduction of cooling. Restrict opening of refrigerator/freezer equipment. Shutdown of research equipment that has a heat load and/or uses chilled water. Consult with EH&S on safe storage of chemicals.
- Potential actions to support curtailment: Check with your School/Department for actions to be taken. Continue to consult with your building manager and management for local updates to action plans. Notify your facilities support unit that steps are being taken to shut down all program related equipment.

STAGE 4

Stage 4 (Permanent Loss of Research, Data Processing or Communications) - Allowing temperatures in research, data processing, or communications spaces, or the process cooling water supplied directly to that equipment, to exceed specifications up to and including inhabitability or equipment inoperability for an extended time period such as 24 hours per day for several days or more.

- Examples of impact: University data/communications systems could be impacted. Potential failure of equipment. Potential loss of data and communication systems.
- Potential actions to minimize impact: Shutdown of computer/networking equipment. Activate other computing centers that don't use chilled water if possible. Consider opening doors and deploying fans to circulate air. Security may be necessary at open doors. Be observant to condensation from chilled water piping on computing equipment.
- Potential actions to support curtailment: Confirm with your facilities support unit of actions to be taken to include full shutdown of program equipment.

STAGE 5

Stage 5 (Animal Life Safety) - Allowing temperatures in facilities housing animals to exceed specifications up to and including inhabitability and potential loss of animal life.

- Potential actions to minimize impact: Contact subject matter experts and advise of chilled water situation. Advise that they should respond per their contingency plans.

STAGE 6

Stage 6 (Human Life Safety) - Allowing temperatures in in-patient hospital spaces to exceed specifications up to and including inhabitability and a threat to human safety.

- Potential actions to minimize impact: LBRE to contact subject matter experts and advise of chilled water situation. Advise that they should respond per their contingency plans.