

University of Alaska - Fairbanks

RESILIENCE OF THERMAL ENERGY SYSTEMS
SERVING MISSION CRITICAL FACILITIES



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- Not much unlike our neighbors at US Army Post - Fort Wainwright and US Air Force Base – Eielson, the University of Alaska Fairbanks Central Heating and Power Plant facility is tasked with serving the UAF “mission critical” facilities including student housing and multiple support buildings (classrooms, etc.), as well as “critical” research project laboratories, support equipment and the likes. Our ability to provide uninterrupted utilities, including heat, electric power, water, and sanitary systems is essential, particularly during extreme cold weather events.

- Of utmost concern during extreme cold weather events is maintaining the integrity of the steam distribution system and its ability to provide thermal energy to heat the many structures on the UAF campus. Should the ability to maintain heat on campus be significantly compromised, arrangements must be made to move students alternative off campus housing (as well as arrangements for feeding the students other than on campus). Sensitive research projects may require alternative heat sources to protect equipment, or other project related materials, or may be required to be relocated to an alternative location as well.
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- The “distribution” side of the utilities at UAF (as well as other CHPP systems in the area) are located in underground “utilidors” or are direct buried lowering the effects/impact during extreme cold weather incidents. Utility systems located in the utilidors include water, steam, air and sanitary system piping. However, should the steam supply in particular be down for any length of time during an extreme weather event, temperatures in the utilidors may drop to such a level that freezing is a threat, the same being a consideration for direct buried piping, etc., should the extreme weather event duration be over an extended period of time.

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- A good imagination is sometimes required in order to work during extreme cold weather. Pre-planning for potential extreme cold weather problems is essential as well. How to handle such problems may be included in your Emergency Action Plan. Questions to be considered may include: Where can students be housed if there services are to be out for any considerable length of time? If portable heating plants are required, where can they be obtained during off hours? How will the heating plants be refueled? Are there contractors available to assist with recovery efforts if on site labor is not sufficient? Has there been an pre-incident training with outside agencies?



- Power plant operations can be particularly trying during extreme cold weather events. Of any operating condition affected by cold weather, fuel handling is probably the most challenging. Getting frozen fuel out of rail cars is particularly troublesome. Depending upon the amount of fines that are in the load, surface moisture content, length of time the car is exposed to extreme cold, availability of (or lack thereof) car thawing at site, and many other factors will dictate the difficulty in getting the fuel loaded into the plant.



- There may be times when testing or other evolutions need to be performed during extreme cold weather events. Performance testing, which required boiler emissions monitoring outside on the main stack, was carried out in just ahead of Christmas at the CHP. This coincided with the first extreme cold weather event in the area. Arrangements were made to provide protection for personnel and delicate equipment from the extreme cold temperatures. A temporary enclosure was erected at the stack sample port level and large indirect fired portable heaters were stationed to provide heated air to the enclosure.

