Technical Guidance Document

Heating System Failures

Heating system failures during the winter can lead to freezing pipes, equipment damage, and disruptions to building operations. Proper heat setbacks, door/window management, and staff walkthroughs during unoccupied times are essential to maintaining a safe and functional facility during colder months. By implementing a few preventive measures, you can minimize the loss associated with heating system failures.

Prior to Extreme Cold

Heat setbacks:

- Set heat setbacks to an appropriate level (specific to your building) to prevent freezing, adjusting based on building layout and insulation.
- It is important, however, to note that every building responds differently, and managers must identify and learn their building's vulnerabilities.
- In some cases, owners may be advised to eliminate the setback altogether for a short period of time during extreme weather conditions.
- Identify what vestibules have wet walls, and further protect by leaving them ajar.

Doors and windows:

- Properly close and lock all exterior doors, skylights, garage doors, windows, and any other building penetrations to maintain building temperature.
- Inspect weatherstripping and seals around doors and windows, replacing any worn or damaged seals to improve energy efficiency and prevent heat loss.
- Check door thresholds (sweeps and seals) and replace if needed to prevent letting in cold air from outside.
- Ensure all exit doors are equipped with functional door closers to maintain building temperature and security.
- Document which doors should remain open or closed as part of your building closure plan.

Unit ventilators:

- Consider using a thermographic camera or hiring a company to do thermographic imaging of the facility to check for cold areas and heat loss around univents and other building locations.
- Check the air intake and exhaust ports of unit ventilators to ensure they are free of snow, ice, or debris, which could block airflow and compromise efficiency. Ensure that the damper closes properly.
- Have means and materials to mitigate cold air intrusion for exterior damper failure.
- Test unit ventilators ahead of extreme cold to ensure they're working properly and have no signs of malfunction.

Building management systems (if your facility has it):

- Use the BMS to monitor heating system performance, temperature, and humidity, with alerts for significant changes.
- Allow remote control of heating systems to address temperature changes or system faults during unoccupied periods.
- Set heating setbacks in the BMS to prevent freezing while maintaining energy efficiency.
- Design and integrate your BMS system into your emergency protocols.
- Facilities without a BMS should consider upgrading to enhance system monitoring and remote control capabilities, especially for managing heating during extreme cold.

Provide essential staff with information:

- Equip essential staff with a list/map of key shut-offs (water lines, gas, electric, etc.)
- Ensure essential staff have access to all parts of the facility.
- Provide essential staff with emergency contact lists. Develop a clear communication strategy for reporting temperature-related, storm damage, and drainage issues.

During Extreme Cold Weather – Conduct Periodic Staff Walkthroughs

Building penetrations:

- Interior doors may be left open to circulate heat into unheated areas based on building closure plans.
- Check exterior door thresholds to ensure they are not letting in cold air from outside.
- Ensure all exterior openings are properly locked.

Building envelope:

- Check all areas of the building for signs of damage or cold spots and ensure that all exterior windows are properly shut/sealed/locked.
- Utilize checklists to assist with the process of walkthrough.
- Check for visible condensation or ice buildup on windows, pipes, or vents as early indicators of freezing risks.

Building management systems (if your facility has it):

- Set BMS alerts for temperature drops below safe thresholds to prevent freezing.
- Throughout the event, check the status of heating units and ventilation systems for proper operation.

Unit ventilators:

- Confirm heating systems are functioning properly, and temperatures are within safe ranges.
- Inspect unit ventilators to ensure they are properly functioning.
- Monitor airflow from unit ventilators, ensuring that air is circulating properly and not restricted by ice or debris.