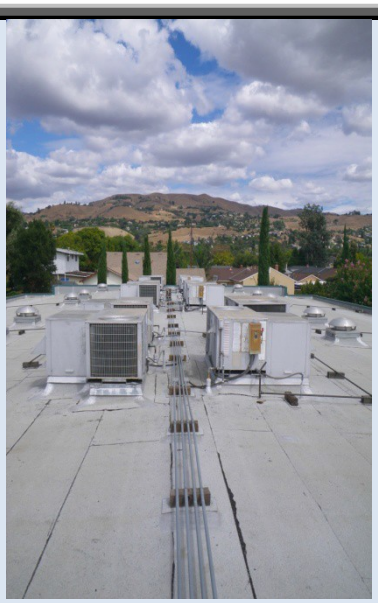
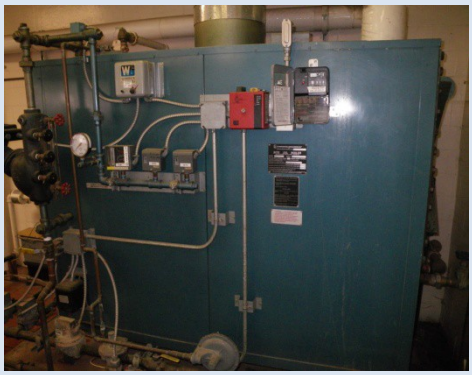
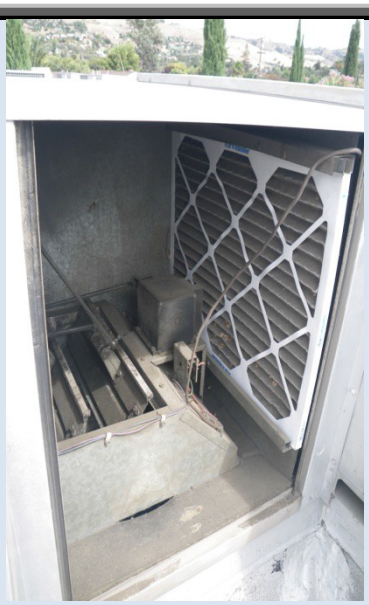
ALERT: HEATING SYSTEMS



Roof Top Gas Furnace



Space Heating Boiler



Air Handler

PROPER PREVENTIVE MAINTENANCE REDUCES COSTLY REPAIRS, EXTENDS EQUIPMENT LIFE, AND INCREASES OCCUPANT SATISFACTION

The U.S. Department of Labor is committed to exceeding client expectations for heating, ventilation, and air conditioning (HVAC) service. This translates to designing an efficient preventive maintenance program yielding year-round savings. Many companies often overlook the correct procedures for air conditioning shut down, and merely switch it off. However, equipment that is not shut down properly may not be able to start up again when needed the next season. Similar to the cooling systems, the heating systems need to be prepared in advance. It is more cost-effective to avoid emergency service calls, and have the equipment repaired before the need arises.

Preventive maintenance is the key to averting repairs. When regular maintenance is neglected, equipment life shortens, energy is wasted, and the building's appearance reflects the lack of care.

The following are effective tips to help Job Corp Center Facility Managers and Maintenance staff members get a jump start on the winter season:

- ***A/C Equipment Shutdown*** – Check all system pressures and operating temperatures, making sure there are no leaks. Check oil levels and water levels. Drain systems where required to prevent freeze up or possibility of water becoming stagnant.

- ***Heating System Startup*** – Switch on all equipment and program set points to maximize operational attributes. Make necessary adjustments to water and oil levels where needed. Analyze all boilers' performance to ensure that the equipment will perform efficiently for the winter.

- ***Equipment Cleaning*** – This is a part of air conditioning (A/C) shut down and the heating start up. Debris buildup in an HVAC system is inevitable, but proper cleaning of all strainers, and evaporator and condenser coils will ensure cleanliness and maximum flow of air and water. Also, the correct cleaning of flue combustion chambers and nozzles is necessary to ensure safe and efficient operation. Other pieces of equipment that should be cleaned are the evaporator and condenser barrels on chillers and cooling towers, which also need to be drained.

- ***Belts and Filter Replacement*** – To purify air streams and optimize fan performance, replace filters and belts, as well as realign belts.

- ***Compressor Analysis*** – Perform an oil analysis on all compressors because lubrication is vital to properly shutting down compressors. With proper compressor oil, maintenance can be reduced and compressor life is extended. Conduct a balance report for critical fans and check refrigerant levels. Refrigerant levels are the key to operating the equipment efficiently. With the correct pressures, the equipment will run as originally manufactured.

Proper maintenance of HVAC equipment will lead to the best possible outcome for a building throughout the year. The benefits of regular maintenance include:

- ***Improved Conditions in the Building*** – With proper HVAC maintenance, comfort is achieved for building occupants, which leads to a more productive work environment.

- ***Improved Air Quality*** – A well-maintained system will not only protect occupants from poor indoor air quality, but also protect the building or organization from litigation, adverse publicity, and potential code violations. Each of these issues could result in additional costs.

- ***Extended Equipment Life*** – A system that is maintained properly will experience fewer breakdowns and have an extended life.

- ***Cost Savings*** – The periodic maintenance of the system will eliminate the need for costly repairs and yield immediate savings.

- ***Energy Savings*** – HVAC systems typically are responsible for more than 40 percent of total energy use. With proper maintenance, this system will work at peak efficiency, which can save a tremendous amount of energy.

A CHECKLIST FOR THE UPCOMING WINTER SEASON

Table 1 provides a series of recommendations for the upcoming winter season. These actions will help prevent equipment failures, optimize performance, and save energy.

Table 1. Preventive Maintenance: A Wintertime Checklist for Job Corps Facilities				
Item	**Recommendation**	**Solution**	**Verify-Action Taken**	**Notes**
1	Keep temperatures comfortable and constant	• Adjust thermostat controls and equipment sequencing. Resolve heat-loss problems with diagnostic tools, such as infrared camera. • Check and assess occupant complaints.	Yes No N/A	Hire an expert to conduct infrared thermography
2	Eliminate space temperature variations	• Remove objects that block the heat diffusers or obstruct air vents, radiators, or baseboard heating elements. • Confirm sensor location is not in the areas of drafts, separation walls, or excessive body heat.	Yes No N/A	
3	Listen to the system	• Listen to the vents. Rattling in the grills could indicate loose belts or bad bearings. • Regular vacuuming keeps fans, air intake, and return registers clean of debris. • Confirm dampers and valve controls are functioning well.	Yes No N/A	
4	Keep calibrations in line with operations	• Ensure winter heating and lighting system schedules remain on target with occupancy schedules and daylight conditions.	Yes No N/A	
5	Control the heating load	• Make sure the heating load (boilers/gas furnace) adequately meets the heating demand.	Yes No N/A	
6	Create occupant awareness	• Inform occupants of the importance of resolving issues, and alerting facility management of any indoor comfort problems.	Yes No N/A	
7	Make contingency plans	• Perform regular checks on the back-up equipment and generators. • Conduct tests with the staff to verify roles and responsibilities, and to be sure systems will operate as planned during an emergency.	Yes No N/A	