

BUILDING RE-TUNING CHECKLIST

Building re-tuning can be an effective low-cost method for reducing building energy use while ensuring that buildings operate as intended and meet current operational needs. Adjustments and fine-tuning may be made to lighting, supplemental loads, building envelope, controls, and all aspects of heating and cooling systems.

The following facility management actions can ensure Connecticut state buildings are operating at peak performance, saving costs and enhanced thermal comfort.

SIMPLE STEPS – LIGHT WORK, ZERO COST

- Lower settings and setbacks of thermostats in all spaces, especially in unoccupied or rarely occupied areas, as aggressively as practicable.
- Check for ways to reduce the cooling load on buildings, including properly shading and blinding windows.
Periodically clean the existing fixtures and replace burned-out lamps and ballasts to considerably increase fixture light output. Cleaning alone may boost fixture light output from 10% in enclosed fixtures in clean environments to more than 60% in open fixtures located in dirty areas. Adjust lighting controls to ensure lighting levels are appropriate for the tasks being performed in the space and current occupant requirements.
- Assess whether furnishings may be obstructing any lighting sensor's line of sight.
- Set refrigeration units to the proper temperature to eliminate excess cooling – the recommended temperature per FDA guidelines is 0° F for the freezer is at or below 40° F for the refrigerator.
- Reduce electrical loads by using ENERGY STAR-labeled office equipment, enabling power management features, and encouraging occupants to shut off or unplug equipment when not in use.

MODERATE STEPS – LIGHT WORK, MINIMAL COST

- Review the utility rate schedule. Utilities typically charge on-peak and off-peak times within a rate, which can dramatically affect the amount of electric bills. If possible, run equipment during the less expensive off-peak hours.
- Regularly replace filters on air handling units and roof top units to fans are running at the proper efficiency by not being restricted by dirty filters.
- Regularly lubricate motor bearings, clean fan fins, and check belts and pulleys for wear and slipping. A motor maintenance plan for all air handling units, roof top units, and exhaust fans increases the life span of the units' motors.

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MODERATE STEPS – LIGHT WORK, MINIMAL COST (CONT.)

- Regularly clean condenser coils on the packaged roof top units, air cooled condensing units, and cooler condensing units. The coils often get plugged with dust, debris, and pollen when exposed to the elements and lose efficiency over time.
- Regularly check condensate receiver pumps for proper operation and blocked piping.
- Regularly service and clean heat exchangers serving the heating hot water and domestic hot water loops to ensure proper heat transfer between the steam and water loops.
- Reduce/eliminate major sources of unintentional air leaking into the building and minimize use of outside air for process ventilation.
- Check steam traps for leaks and make repairs as needed. Boiler system steam traps can become stuck in the open or closed position. When a trap is stuck open, steam can escape through the condensate return lines to the atmosphere, and the resulting energy loss can be significant.
- Check that EMSs, time-clocks, and electronic wall-box timers are programmed correctly to ensure that lights are operating only when the building is occupied and that overrides are operational where required. Exterior lighting schedules must also be changed throughout the year according to the season.

HARDER STEPS – MODERATE WORK, MODERATE COST

- Install programmable thermostats capable of heating and cooling setback temperature schedules based on occupancy hours or manually optimize morning warmup and night setback controls.
- Tighten the existing building by locating all air leaks in the windows, doors, walls, and roofs and repair or add insulation.
- Seal with appropriate materials and techniques such as weather stripping on doors; sealing and caulking on windows; and proper insulation distribution in walls, ceilings, and roofing.
- Replace plumbing/water fixtures with more efficient components
 - Replace 1.6 gallon per flush (GPF) water closets with 1.28 GPF (single-flush) water closets.
 - Replace 1.0 GPF urinals with 0.125 GPF urinals.
 - Replace 0.5 or 1.0 gallon per minute (GPM) lavatory faucets with 0.35 GPM faucets.
 - Replace 2.5 GPM kitchen and general duty sinks with 1.5 GPM faucets.
- Contract a retro-commissioning agent to verify building is operating as designed, including testing and balancing of air and water systems. Retro-commissioning can save anywhere from 1-10% of yearly energy use, depending on the nature of the energy systems and how far off from their original intended design they're operating.

These tips were drawn from the DOE FEMP Facility Energy Checklist and EPA's EnergySTAR Building Manual - Chapter 5 in August 2020.