Treasure Map FOR OFFICE BUILDINGS

Grab a clipboard and take this map along on your treasure hunt. Focus on uncovering opportunities to save. When you find something, make notes about location; tools, materials, or expertise needed; or further research required. Feel free to add to or modify this list to suit your own needs.

Facility Name _____ Floor _____ Date _____ Team _____

1 Facility Management

- ❑ Make note of your EUI and ENERGY STAR Score in Portfolio Manager.
- ❑ Ensure that facility energy management plan and operations & maintenance plan is up to date and that appropriate staff have reviewed the latest versions.
- ❑ Review building management system (BMS) and/or building automation system (BAS) code to ensure that specific commands to reduce unneeded energy consumption (e.g., on/off times) have not been overwritten.
- ❑ Consider daytime cleaning to reduce the hours the space is occupied. This allows for more aggressive "unoccupied mode" scheduling for lighting and HVAC.

2 Lighting

- ❑ Identify where lights have been left on in unoccupied spaces.
- ❑ Identify and assess opportunities to use automated lighting controls:
  - ❑ Occupancy/motion sensors for low-traffic areas.
  - ❑ Timers or daylight sensors to dim or turn off exterior and parking lot lights during the day.
  - ❑ Dimming controls in locations where there is natural lighting (e.g., near windows, skylights, light tubes).
- ❑ Confirm that installed lighting controls are operating as intended.
- ❑ Assess need to institute a regular cleaning plan for lamps/fixtures for maximum light output.
- ❑ Identify where reflectors can be practically added to existing lighting.
- ❑ Assess whether any areas are over-lit, compared to requirements or design levels; consider opportunities for de-lamping.
- ❑ De-energize and/or remove ballasts that are not in use.

NOTES:

- ❑ Evaluate the opportunity to upgrade to more energy-efficient lighting options:
  - ❑ Replace T12 fluorescents with T8s or T5s with electronic (rather than magnetic) ballasts; consider the use of tubular LEDs (TLEDs).
  - ❑ Upgrade incandescent and CFL applications to LED (especially for task lighting or specialty applications).
  - ❑ Use LED Exit signs in place of incandescent or CFL models.

3 Building Envelope

- ❑ Inspect doors and windows to identify gaps or cracks that can be repaired.
  - ❑ Note damaged or missing weather stripping.
- ❑ Note air leaks that should be sealed with caulking or other sealant.
- ❑ Assess the opportunity to install solar film or other window coverings on east, west, or south exposures to reduce solar heat gain and heat loss.
- ❑ Assess the opportunity to install air lock doors for main entrances.
- ❑ Assess the opportunity to install a reflective ("cool") roof covering in warm climates.

4 Equipment/Plug Loads

- ❑ Identify any new office equipment that will be needed soon; make plan to ensure they are ENERGY STAR certified where possible.
- ❑ Identify any equipment left on overnight (including those left in sleep/idle or screen saver mode).
- ❑ Ensure that power management settings are activated on office equipment such as computers, monitors, printers, and copiers.
- ❑ Ensure that any large-screen TV monitors are turned off during unoccupied times.
- ❑ Use networked printers, rather than personal printers in offices or workstations.
- ❑ Identify and discontinue the use of personal heaters and fans in offices or workstations (the use of such personal devices may indicate broader hot/cold issues that should be addressed at the system level).
- ❑ Identify where power strips can be used for easy disconnect from power source. Consider the use of advanced power strips.

NOTES:

- ❑ Check if vending machines get turned off or put in sleep mode at the end of the day. Consider installing motion/occupancy-based vending machine controls.
- ❑ Look for opportunities to replace older vending machines with new ENERGY STAR certified vending machines.

5 HVAC

- ❑ Identify and make plans to address instances of simultaneous heating and cooling.
- ❑ Ensure that thermostats and outside air temperature sensors are properly calibrated/maintained.
- ❑ Ensure that thermostats are set to appropriate temperatures based on season and local weather conditions.
- ❑ Confirm implementation of a temperature setback policy for heating/cooling when the building is unoccupied.
- ❑ Perform testing and balancing of air and water systems.
- ❑ Ensure that thermostats are properly located to be representative of the room or zone for which the temperature is being controlled.
- ❑ Identify where locking covers for thermostats and ventilation controls can be installed to prevent unauthorized adjustments.
- ❑ Ensure free airflow to and from registers.
- ❑ Monitor make-up air ventilation; ensure the proper functioning of dampers to achieve outside air requirements.
- ❑ Ensure that HVAC system components are being maintained regularly, including:
  - ❑ Replace filters on a regular schedule
  - ❑ Inspect and clean evaporator and condenser coils.
  - ❑ Clean fan blades and adjust belts as needed.
  - ❑ Inspect water/steam pipes and ducts for leaks and/or inadequate insulation; address as needed.
  - ❑ Verify and calibrate operation of variable air volume (VAV) boxes, where applicable.
  - ❑ Evaluate furnace/boiler efficiency and clean/tune up as needed (including boiler water treatment and inspection of steam traps, as appropriate).
  - ❑ Check chiller and cooling tower components for fouling or corrosion; ensure proper water treatment is in place.
  - ❑ Check for unusual noise, vibration and/or decrease in performance of compressors/motors.

NOTES:

- ❑ Evaluate how chillers operate during the cold months and determine if chiller or pumps can be shut off.
- ❑ Assess opportunities to install hot water reheat coils in place of electric reheats, and to use waste heat where possible.
- ❑ Assess the opportunity to install and use air-side economizers, so that outside air can be used for "free cooling."
- ❑ Identify and assess opportunities for heat recovery.
- ❑ Identify and assess opportunities for installing variable frequency drives (VFDs) for fan and pump motors, and variable air volume (VAV) boxes in the ductwork – especially where variable loads are being served.
- ❑ Identify and assess opportunities for demand-controlled ventilation in areas with variable loads (e.g., conference rooms, auditoriums, cafeterias)
- ❑ Identify and assess opportunities to use occupancy sensors to control HVAC in personal offices or conference rooms.
- ❑ Check underground parking garage ventilation systems for operation during unoccupied times.
- ❑ Assess the opportunity to install carbon monoxide monitoring/control for garage ventilation systems.

NOTES:

ADDITIONAL NOTES: