

# COVID-19 RESPONSE

# Modified Operations Recommendations for Higher Education



### About this guide

Your local power company and TVA EnergyRight have partnered to provide the enclosed modified operations strategies in response to the COVID-19 situation impacting Institutions of Higher Education around the Valley.

While you understand how to handle facility shutdowns for typical breaks and closures, you may be asking how to handle buildings and equipment during longer-term shutdowns.

In the following pages, you will find answers, including tailored recommendations for turning off or adjusting electronics, appliances and energy and water systems across your campus, as well as sanitation, maintenance and operational practices to undertake while your facilities are unoccupied.

The TVA EnergyRight team empathizes with you during this challenging period. We hope you and your maintenance personnel find this guide useful and we are here to assist if you have any questions.

Sincerely, TVA EnergyRight





## About TVA EnergyRight®

EnergyRight for Business & Industry partners with your local power company to provide energy management advice and resources, and to offer incentives to offset some of the costs associated with smart energy technology upgrades.

Visit EnergyRight.com to find out more.

### A few reminders...

Every Institution of Higher Education's essential services and operations will vary. It's important to work with your facility operations staff to ensure needs are met across campus.

Before you address energy needs in facilities, consider the following:

- Ensure emergency & security systems are operating as intended
- Routinely clean and disinfect surfaces and objects that are frequently touched (e.g., doorknobs, light switches, classroom sink handles, countertops)

- Provide disposable wipes to anyone entering your facilities so that commonly used surfaces (e.g., keyboards, desks, remote controls) can be wiped down before use
- Make a plan for students, faculty, and staff to safely retrieve essential equipment and personal belongings while limiting personto-person contact.

### CLEANING TIPS TO KEEP IN MIND

 Continue routine cleaning and disinfecting using EPA-approved products

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- Make sure you are using products safely
- Dispose of waste properly
- Clean AC vents and units

### Shutdown procedures

When occupancy is reduced at your institution for COVID-19, there are steps you can take to maintain a safe environment, save energy and prevent damage to systems.

### Spaces

#### GENERAL

- Turn off all non-essential interior lighting
- Close all windows, doors and blinds
- Reduce outdoor lighting levels for unfrequented pathways, parking areas
  - Adjacent areas should remain lit to maintain public safety
- Maintain operation of critical infrastructure such as data centers and server rooms

#### ACADEMIC AND ADMINISTRATIVE BUILDINGS

- Turn off computers, monitors, printers, copy machines and scanners
- Turn off projectors and audio systems (or put in sleep-mode)
- Unplug ELMOs, document cameras and overheads
- Turn off or unplug vending machines
- Turn off, unplug or de-energize water fountains
- Empty, defrost and unplug refrigerators and freezers
- Unplug unnecessary equipment, such as:
  - Cell phone and laptop chargers
  - Space heaters and personal fans
  - Lamps, decorations and air fresheners
  - Coffee machines
  - Desk phones (power only, leave network cable connected)

#### DORMITORIES AND APARTMENTS

- Turn off computers, monitors and printers
- Unplug unnecessary equipment, such as
  - Cell phone and laptop chargers
  - Box fans and space heaters
  - Lamps, decorations and air fresheners
  - Microwaves and coffee machines
- Empty, defrost and unplug refrigerators
- Turn off bathroom exhaust fans

#### LABORATORIES

- Safely store and secure all hazardous materials
- Close gas valves and secure gas cylinders
- Ensure cryogenic liquids are properly vented
- Check and properly store pressure-, temperature-, air-, or moisturesensitive materials and equipment
- Check that refrigerator, freezer and incubator doors are tightly closed
- Close the sash on chemical fume hoods
- Turn off heat-generating equipment (e.g., hot plates, stir plates, ovens)
- Turn off computers, monitors and printers
- Turn off or unplug nonessential equipment
- Remove equipment and materials from window sills

### Spaces, continued

#### DINING HALLS AND OTHER FOOD/ DRINK SERVICE LOCATIONS

- Consolidate refrigerators and freezers; defrost and unplug empty units
- Turn off or unplug nonessential cooking equipment (e.g., ovens, fryers, stovetops)
- Turn off exhaust hoods
- Leave dishwashers slightly ajar to prevent growth of mold and mildew
- Turn off or unplug unnecessary serving equipment (e.g., warmers, coffee machines, toasters)
- Turn off cash registers, computers and payment machines
- Turn off or unplug vending machines

### AUDITORIUMS AND SPORTING FACILITIES

- Turn off computers and monitors
- Turn off lighting in display cases
- Turn off, unplug or de-energize nonessential equipment, such as:
  - $\circ~$  Overhead and floor fans
  - Bathroom and locker room exhaust fans
  - Production equipment (e.g., audio, visual, lighting)
  - Score boards, video displays and field lighting
  - Water fountains and ice machines
- Consolidate refrigerators and freezers; defrost and unplug empty units
- Turn off or unplug unnecessary concessions equipment



#### LIBRARIES

- Turn off computers, monitors, printers, copy machines and scanners
- Unplug lamps and display case lighting
- Turn off unnecessary equipment
- Turn off or unplug vending machines

### Equipment

### GENERAL

- Implement protocols to allow access to predetermined, approved areas by request
  - If an area must be occupied, consider increasing outside air to a maximum and disabling demand control ventilation
  - Schedule occupancy of areas to limit person-to-person contact
- Notify utility providers of extended vacancy resulting in atypical usage
- Continue preventative maintenance activities
- Frequently survey buildings for improper equipment operation (e.g., constant volume fan operating 24/7, outside air damper failed to 100% open, condensation/humidity concerns)
- Understand operational limitations of condensing vs. non-condensing boiler systems
- Inspect hot/chilled water and steam distribution piping for leaks and missing insulation
- Consider increasing MERV rating of central air filtration, utilizing portable room air cleaners with HEPA filters

### HVAC CONTROLS AND AIR DISTRIBUTION

- Set building automation systems to unoccupied where applicable
- Set thermostats to unoccupied setpoints (55°F heating / 85°F cooling)
  - Make note of areas with temperature sensitive equipment and adjust setpoints accordingly
- Set HVAC fans to "Auto" mode (ensure fans are not short cycling)
- Set HVAC to maintain relative humidity below 60%
- Close outside air dampers to minimum allowable position
- VAV Systems
  - Set supply dampers to minimum allowable position
  - Set supply fan to minimum speed to reduce static pressure
  - Increase supply air temperature (cooling)
- Ensure control valves and instrumentation are functioning properly
- Monitor system present values for energy efficiency opportunities (low temperature delta across coil → reduce flow through coil)
- Disable energy recovery ventilation wheels



### Equipment, continued

#### CHILLED WATER SYSTEMS

- Optimize operation for low loads by monitoring chiller plant efficiency and strive to maintain a value at or below 0.9 kW/ton
- For multi-chiller plants, consider minimizing partial loading of multiple chillers
  - Research suggests fully loading chillers by nominal cooling capacity, cascading from the largest to the smallest
- Be aware of limitations in accommodating reduced condenser and chilled water return temperatures
- Maintain design temperature differences across coils, reducing supply flowrate as needed
- Take advantage of water side economization
- Increase chilled water supply temperature
- For multi-cell cooling towers or multiple tower systems with variable or multispeed fans, consider operating multiple fans at lower speeds to maximize surface area for heat transfer
- Implement condenser water reset but be aware of chiller equipment limitations
- Either drain or continue treatment for cooling tower systems

#### HOT WATER/STEAM SYSTEMS

 Optimize boiler loading strategy based on equipment efficiencies in different firing ranges (some units may have peak efficiency at lower loads, while others peak at higher loads)

- Ensure stack gas analyzers work correctly and optimize air-to-fuel ratio accordingly
- Implement hot water reset
- Reduce hot water return temperature to increase condensing boiler efficiency
- Maintain temperature differences across coils, reducing supply flowrate as needed
- Inspect steam traps for proper function
- Perform ultrasonic leak detection of steam piping
- Investigate boiler blowdown frequency and efficacy
  - Consider surface or skimming blowdown with heat recovery

### Fighting future viruses

Consider installing ultraviolet germicidal irradiation (UVGI) in your buildings to better protect staff and students from airborne diseases. UVGI improves indoor air quality by reducing airborne biological contaminants, including coronaviruses. Incentives available now through TVA EnergyRight.

Visit EnergyRight.com for more information.