Energy Reduction Strategies

Lighting

- Turn off lights during daytime hours and when a room is not in use
- Place signs and stickers in dorms, offices, and classrooms to remind people to "Switch It Off" if not in use (education drive to promote "Lights Off" culture)
- Removing bulbs from lights that have enough light otherwise
- Staff practice a "Lights Out Friday" for offices that have enough natural light
- Use daylight ballasts that automatically shutoff and turn down lights when daylight is available.
- Install occupancy-control sensors (e.g., in classrooms, hallways, equipment rooms, supply closets, offices, restrooms, etc.)
- Turn off all lights (inside and outside) each day after the buildings are locked for the night. Timers must be adjusted for such hours.
- Use energy efficient lighting like the following:
    - Replace old, outdated ballasts and T12 fluorescent lights with new, quick start, energy-efficient ballasts, and T8 or T5 lights when current fixtures fail.
    - Install LEDs. LEDs are available for a standard 4' fluorescent fixture with minor alterations.
    - Install cooler light bulbs. The color of light emitted by a bulb is indicated by its temperature. Temperature in the 3,000K to 4,000K range is more yellow and soft. Temperatures in the 5,000K to 6,000K range are more blue and cool. Lights in the higher temperature ranges are perceived as providing more light. Using higher temperature bulbs at lower wattages can save energy. The higher temperature bulbs are good for hallways, classrooms and gymnasiums, but not for dorm rooms.
    - Replace emergency exit signs at the center with more energy efficient LED models
- Install natural lighting tubes such as Solartubes.
- Use appropriate partial lighting for after-hours activities (e.g., partial banks of lights for practice or group meetings).
- The amount of athletic lighting used should be appropriate for the activity and used only when necessary (e.g., use lights only when it is dark). Athletic field lights should not be used as security lights. These lights use much more energy than other site lighting and can cost in the thousands per year when operated for long periods of time.
- Outside lighting is controlled by:
    - Timers set for all exterior lights to turn on and off at appropriate times.
    - Photocells
- On an on-going basis, members of the center's management staff can evaluate lighting requirements in areas under their supervision, and reduce wattage when possible.

HVAC

- Thermostats/temperature settings are the single most efficient way to reduce energy usage. Make a temperature setting policy, give control to maintenance personnel, and abide by the policy.
- In any area where HVAC is in operation, doors and windows must remain closed.
- Return airflows must be unrestricted.
- Use the building automation system (if applicable), which controls heating and cooling campus wide, to assist in conservation of electricity and natural gas. For example, A/C units are on a computerized system and are scheduled to turn on and off; temperatures can only be controlled via the system. Use economizer cycles and outside air reset.
- Tinted film has been installed on the cafeteria windows to assist in heat control (A/C utilization).
- Use programmable thermostats with energy settings (lowering cooling/heating settings in appropriate areas (e.g., empty offices, shops, classrooms, etc) at the end of the day:

Building Condition	Summer (A/C)	Winter (Heating)
Occupied	75 F	68 F
Unoccupied	84 F	60 F
Sleep	75 F	64 F

- Develop preventive maintenance schedules for electric, heating and air conditioning.
- Ensure kitchen hoods and their makeup air units are turned off at the end of the day.
- Turn off exhaust fans when not needed. Bathroom exhausts should be run when needed to remove humidity or odors.

Openings

- Keep window blinds down in the summer and open in the winter to control direct sunlight into the dormitory rooms, classrooms and offices.
- Install metal sunscreens above windows with southern and western exposure.
- Only open windows and doors when the HVAC system is not operational.
- Install new weather stripping on doors and windows.
- Install threshold sweeps to help prevent air from infiltrating under doors.
- Use of Energy Star R-3.33 or better windows.

Products/equipment

- Green Work posters have been purchased and placed throughout the center to remind staff and students to place equipment on hibernate mode when not in use and to turn off equipment at the end of the day.
- Establish a protocol to put computers in hibernate when not in use for a set period of time.

- Unplug equipment and/or turn off after each use: printers, monitors, computers, coffee pots, paper shredders, electrical pencil sharpeners, fans, televisions, lights under cabinets, Promethean board, scanners, charging devices.
- Use power-saver strips that can automatically turn off equipment when not in use.
- Enable power-savings features on all office equipment (example: computers set to energy-saving settings).
- Update purchasing plan to incorporate energy-efficient equipment such as Energy Star and Green Seal products.
- Purchase Energy Star appliances (e.g., washing machines, furnaces 95+, boilers 95+, chillers).
- Set water heaters set for usage time only (pre-heat should be 30 minutes).
- Turn off water heaters that are never used (e.g., custodial rooms).

Policies

- Provide instructions from the Center Director to tell all staff to turn off lights when leaving their office, classroom, or shop.
- All staff and students are encouraged to police for lights unnecessarily burning.
- Remove mini-fridges.
- Adhere to "no space-heater" policy.
- Monitor energy usage monthly to watch for spikes; they may indicate a problem.
- All Career Technical Skills Training projects requiring replacement of HVAC, lighting, restroom fixtures must meet energy efficient requirements.
- Security staff should walk through the food service areas at the end of each day to ensure that all equipment is turned off.
- Designate the following duties to one or more staff members:
    - A main person to lead efforts to reduce energy consumption and costs through modifications to facilities and equipment (i.e., use timing or cycle-control devices, use energy-efficient lighting, materials and equipment, execute preventative maintenance plan, setting the temperature of domestic hot water supply no higher than 125 degrees Fahrenheit, except for dishwashers, insulate exposed hot water and steam pipes).
    - Complete 6-week preventative maintenance cycle for inspecting lights and photo cells.
    - Periodically inspect unnecessary use of electricity (i.e., lights on when not in the area and equipment running when not in use).
    - A staff member to monitor and ensure that appropriate temperatures are used for occupied/unoccupied spaced.

Renewable Energy Projects

- Solar-power panels.
- Replace outdoor lighting with solar lighting.

Other

- Insulate walls and ceilings.
- Install misers in vending machines.
- Conduct energy-saving presentations from the local electric and water companies during annual center business meetings.

Water Reduction Strategies

Fixtures

- Install low-flow (and vandal proof, as applicable) fixtures (such as Environmental Protection Agency [EPA] WaterSense fixtures) in accordance with the table below:

Low Flow Product Specifications	
Faucets	1.0 gallons per minute or less
Shower Heads	1.8 gallons per minute or less
Service Sinks	2.0 gallons per minute or less
Urinals	0.125 gallons per flush or less
Toilets	1.28 gallons per flush or less, or 1.6/0.8 gallons per dual flush or less

- Install water faucets, urinals, and toilets that have sensors so they are not left on.
- All fixtures should be compliant with EPA WaterSense.
- Use Energy Star washing machines.

Irrigation

- A rain-harvesting cistern/rain-collection barrel for irrigating, watering plants, shrubs, flower beds, and gardens.
- Water plants minimally, and limit the time spent watering.
- Xeriscape, which is a gardening technique that reduces need for supplemental water from irrigation.
- Use moisture/rain sensors for garden sprinkler system or irrigation system, as applicable.
- Do not irrigate on windy days.
- Limit irrigation to early morning, late evening or night.
- Use dripline irrigation where feasible; avoid spray irrigation.
- Only irrigate during the growing season.

Policies

- Fix system leaks.
- All employees should immediately to report any of the following:
    - Leaks
    - Continuously flushing toilets
    - Suspected or actual water pipe breaks
    - Batteries that need to be replaced in electronically controlled faucets (a faucet that does not shut off indicates that batteries need to be changed); some centers use

Computer Maintenance Management Systems (CMMS) preventative maintenance tasks to change batteries on a regular schedule.

- Dripping faucets
- Do not let water run while brushing teeth and/or shaving.
- Prohibit the washing of personal cars.

Other

- Post signs around center reminding students and staff to report water leaks and to shut off water taps tightly.
- Use tank-less water heaters.
- Discontinue using plastic trays for carrying plates.
- Monitor water usage in dish-washing area.
- Do not thaw foods using the cold-bath method.
- Use efficient sprayers for dish washing.

Waste-Reduction Strategies

Recycling

- Campus wide, active recycling program; schedule to have bins picked up by assigned staff and/or students
- Recycling programs could include (but not limited to):
    - Cardboard
    - Aluminum cans
    - Paper
    - Plastic Bottles
    - Cans
    - Glass
    - Batteries
    - Scrap metal (such as copper, etc.)
    - Light bulbs
    - Motor Oil
    - Cooking Oil
    - Paints/solvents
    - Tires
    - Concrete
    - Wood
    - Printer Toners
    - Ink
    - Toner
    - Electronics (such as cell phones, etc)
    - 5-gallon containers previously used for cleaning solution
- Check trash for recycled items.
- Ask students to remind fellow students to recycle.
- Place recycling bins in:
    - Offices
    - Dormitories
    - Cafeteria
- Place recycling dumpsters throughout center.
- Reuse metal and wood products as training materials.
- Use vendors that recycle waste oil and provide waste oil pick-up for recycling.
- Donate useable furniture that is no longer needed.
- Implement a food waste pick-up program.

- Use green-waste mulch area used to beautify the campus.

Waste Reduction

- Discontinue using disposable cups in the staff break room, and require staff to bring their own coffee mugs or cups.
- Reuse paper if only printed on one side.
- Have copy machines set to duplex settings.
- Eliminate using printed forms when possible (for example: reduce the amount of paper by using overhead projector for presentations and training).
- Use energy-efficient electrical hand dryers instead of paper towels in rest rooms.
- Control paper towels usage (where hand dryers are not), by installing discreet-size paper towel dispensers.
- Chemical dispensers in laundry rooms minimize use of plastic containers.
- Use concentrates for cleaning materials. The center can mix the concentrate and then dispense the cleaning solution in bottles that can be refilled.

Polices

- Share whole-center recycling and conservation awareness information (i.e., e-mails, bulletins, managers' talking points).
- Routinely check automated-dispensing systems for: paper towels, hand soaps, laundry soaps, and janitorial cleaning products. Check settings and calibrate adjustments to promote minimal waste and maximum product efficiency.
- Routinely look for ways to minimize the use of paper products.

Other

- Compost.
- Purchase of items like copy machine paper that are made with recycled material.
- Reuse of products (for example, ask if anyone has use for a product before recycling it or throwing it away).
- Spring clean-up and collection of sand used in winter snow/ice cleanup for reuse in the following winter.

Other Reduction Strategies

- Establish a "Green Team," and discuss ways to minimize energy and water usage, and trash.
- Green Team meetings could include:
    - Starting meetings and conservation efforts with student/staff awareness and best practices (for example, if you take a 15 minute shower you utilize approximately 75 gallons of water, by cutting showering time to 10 minutes, 25 gallons of water can be conserved).
- Increase center-wide awareness of energy and water conservation.
- Educate students and staff with training.
- Purchasing policy that requires that products meet Energy Star and WaterSense requirements.
- E-mail "Green Tips."
- Donate next-to-new clothing.
- Open a student thrift store, "New 2 U."

One center reported: "Our success is in the many staff and students who are committed to energy conservation. We talk about energy conservation in staff and student meetings. Students and staff work together to package the recycled materials for delivery to the local recycling center, and we have a strong relationship with the local recycling center supporting their community recycling projects. Our Student Government has created a position for a Green Sustainability Officer, and Recycling Coordinators are assigned to each of the buildings."