

COMMERCIAL CONSERVATION TIPS



WATER SAVING TIPS FOR THE BEVERAGE INDUSTRIES

GENERAL SUGGESTIONS

- Appoint a water conservation coordinator with the responsibility and authority for a water conservation program.
- Make the plant manager and other employees aware of the water conservation coordinator's function.
- Increase employee awareness of water conservation by explaining the importance of individual actions to the success of the program.
- Seek employee ideas for water conservation using contests, rewards, and suggestion boxes.
- Read water meter daily to monitor and report the success of water conservation efforts.

SURVEY THE PLANT

A plant survey helps to establish facility water savings potential by identifying areas where water is wasted or where water could be reused.

- Identify the major water lines. Determine the quality, quantity, and temperature of water carried by each.
- Identify all points where water is used, including hose connections. Determine the quantity of water used at each point.
- Determine the capacity of each water-containing unit and frequency of emptying.
- Determine the capacity of each continuous discharge not yet being reused.
- Determine flow rates in floor gutters and whether the flows are adequate to prevent solids accumulation.

EVALUATE SURVEY

Review the information developed during the survey.

- Identify the major water-using operations.
- Review the water re-use practices currently employed and develop plans to improve re-use. Study the potential for screening and disinfecting reclaimed water to increase the number of times it can be re-used.
- Evaluate the feasibility of installing cooling towers.

WATER CONSERVATION TIPS

- Install high-pressure low-volume nozzles on spray washers.
- Use fogging nozzles to cool product.
- Install in-line strainers on all spray headers; inspect nozzles regularly for clogging.
- Adjust pump cooling and flushing water to the minimum required.
- Determine whether discharges from any operation can be substituted for fresh water supplied to another operation. Discharges that can potentially be re-used are:

- Final rinses from tank cleaning, keg washers, fermenters
- Bottle and can soak and rinse water
- Cooler flush water, filter backwash
- Pasteurizer and sterilizer water.
- Areas of possible re-use are:
 - First rinses in wash cycles
 - Can shredder, bottle crusher
 - Filter backflush
 - Caustic dilution
 - Boiler makeup
 - Refrigeration equipment defrost
 - Equipment cleaning, floor and gutter wash.
- Use conveying systems that use water efficiently.
- Handle waste materials in a dry mode if possible.
- Replace high-volume hoses with high-pressure, low-volume cleaning systems.
- As equipment wears out, replace with water-saving models.
- Equip all hoses with spring loaded shutoff nozzles. Be sure these nozzles are not removed.
- Instruct employees to use hoses sparingly and only when necessary.
- Adjust overflows from recirculation systems by controlling the rate at which make-up water is added:
 - Install float-controlled valve on the makeup line.
 - Close filling line during operation.
 - Provide surge tanks for each system to avoid overflow.
 - Turn off all flows during shutdowns (unless flows are essential for cleanup).
 - Use solenoid valves to stop the flow of water when production stops. Activate valves by tying them to drive motor controls.
 - Adjust flow in sprays and other lines to meet minimum requirements.

EVALUATE CLEAN-UP PROCEDURES

- Sweep and shovel solid materials from the floor; do not use hoses for this purpose.
- Provide an adequate number of receptacles for collecting solids and empty the receptacles frequently to prevent odor and insect problems.
- Inventory all cleaning equipment (such as hoses) provided in the plant: determine the number and types of units provided.
- Inventory all cleaning chemicals used in the facility to determine if they are being used correctly and if they are water efficient.

EXTERIOR AREAS

- Wash company vehicles less often.
- Discontinue using water to clean sidewalks, driveways, loading docks, and parking lots.
- Consider using mobile sweepers and vacuums.
- Avoid landscape fertilizing and pruning stimulating excessive growth.
- Remove weeds and unhealthy plants so remaining plants can benefit from the water saved.

- In many cases, older, established plants require only infrequent irrigation. Look for indications of water need, such as wilting, change of color, or dry soils.
- Limit landscaping additions and alterations.
- In the future, design landscapes with native plants, which require less water.
- Install soil moisture overrides or timers on sprinkler systems.
- Time watering, when possible, to occur in the early morning or evening when evaporation is lowest.
- Make sure irrigation equipment applies water uniformly.
- Investigate the advantages of installing drip irrigation systems.
- Mulch around plants to reduce evaporation and discourage weeds.
- Remove thatch and aerate turf to encourage the movement of water to the root zone.
- Avoid runoff and make sure sprinklers cover just the lawn or garden, not sidewalks, driveways, or gutters.
- Do not water on windy days.



WATER SAVING TIPS FOR COMMERCIAL BUILDINGS

GENERAL SUGGESTIONS

- Increase employee awareness of water conservation.
- Install signs encouraging water conservation in employee and customer restrooms.
- When cleaning with water is necessary, use budgeted amounts.
- Determine the quantity and purpose of water being used.
- Read water meter weekly to monitor success of water conservation efforts.
- Assign an employee to monitor water use and waste.
- Seek employee suggestions on water conservation; locate suggestion boxes in prominent areas.
- Get creative! Determine other methods of water conservation specific to your situation.

BUILDING MAINTENANCE

- Check water supply system for leaks.
- Turn off any unnecessary flows.
- Repair dripping faucets, showers and continuously running or leaking toilets.
- Install faucet aerators where possible.
- Reduce the load on air conditioning units by shutting off air conditioning when and where it is not needed.
- Reduce toilet water by adjusting flush valves or installing dams and flapper mechanisms.
- As appliances or fixtures wear out, replace them with water-saving models.
- Shut off water supply to equipment rooms not in use.
- Minimize the water used in cooling equipment in accordance with manufacturers recommendations. Shut off cooling units when not needed.

CAFETERIA AREA

- Turn off the continuous flow used to clean the drain trays.
- Turn dishwasher off when not in use. Wash full loads only.
- Use water from steam tables to wash down cooking area.
- Do not use running water to melt ice or frozen foods.
- Use water-conserving ice makers.

EXTERIOR AREAS

- Inventory outdoor water use for landscaped areas.
- Water landscapes only when needed. Two-to-three times a week is usually sufficient.
- Water in the early morning or evening.
- Make sure that water does not run into the streets or alleys.
- Stop hosing down sidewalks, driveways, and parking lots.
- Use time controllers on sprinkler systems.
- Do not water on windy days.

WATER SAVING TIPS FOR FOOD PROCESSING FACILITIES

GENERAL SUGGESTIONS

- Appoint a water conservation coordinator with the responsibility and authority for the water conservation program.
- Make the plant manager and other employees aware of the water conservation coordinator's function.
- Increase employee awareness of water conservation:
 - Explain the importance of individual actions to the success of the program.
 - Seek employee ideas for water conservation using contests, rewards, and suggestion boxes.
 - Read water meter daily to monitor and report the success of water conservation efforts.

SURVEY THE PLANT

A plant survey helps to establish facility water savings potential by identifying areas where water is wasted or where water could be reused.

- Identify the major water lines. Determine the quality, quantity, and temperature of water carried by each.
- Identify all points where water is used, including hose connections. Determine the quantity of water used at each point.
- Determine the capacity of each water-containing unit and frequency of emptying.
- Determine the capacity of each continuous discharge not yet being reused.
- Determine flow rates in floor gutters and whether the flows are adequate to prevent solids accumulation.

EVALUATE SURVEY

- Review the information developed during the survey to identify the major water-using operations and review the water re-use practices currently employed.
- Develop plans to improve re-use:
 - Evaluate the feasibility of installing cooling towers.
 - Study the potential for screening and disinfecting reclaimed water to increase the number of times it can be re-used.

MAXIMUM WATER-USE EFFICIENCY

- Install high-pressure low-volume nozzles on spray washers.
- Use fogging nozzles to cool product.
- Install in-line strainers on all spray headers; inspect nozzles regularly for clogging.
- Adjust pump cooling and flushing water to the minimum required.
- Use conveying systems that use water efficiently.
 - Handle waste materials in a dry state when possible.

- Use conveyor belts for product transport; preference should be given to "rabbit- ear" or "V" shaped roller supports because these are much easier to clean.
- Use pneumatic conveying systems wherever possible.
- Use flumes with parabolic cross sections rather than flat- bottom troughs.
- Establish optimum depth of product on conveyors to maximize wash water efficiency.
- Replace water-intensive units with alternatives - Rubber-disk units for raw product cleaning and peeling, Steam for water blanchers, or Evaporative coolers for hydrocooling systems.
- Determine whether discharges from any operation can be substituted for fresh water supplied to another operation.
 - Divide the spray wash units into two or more sections and establish a counter flow re-use system.
 - Use reclaimed water for flushing floor gutters.
 - Replace high-volume hoses with high pressure, low-volume cleaning systems.
 - As equipment wears out, replace with water-saving models.

AVOID WASTE

- Equip all hoses with spring loaded shutoff nozzles. Be sure these nozzles are not removed.
- Instruct employees to use hoses sparingly and only when necessary.
 - Adjust flows from recirculation systems (washers, flumes) by controlling the rate of makeup water:
 - Install float-controlled valve on the makeup line.
 - Close filling line during operation.
 - Provide surge tanks for each system to avoid overflow.
- Turn off all flows during shutdowns (unless flows are essential for clean-up). Use solenoid valves to stop the flow of water when production stops. Activate valves by tying them to drive motor controls.
- Adjust flows in sprays and other lines to meet the minimum requirements.

EVALUATE CLEAN-UP PROCEDURES

- Sweep and shovel solid materials from the floor; do not use hoses for this purpose:
 - Provide an adequate number of receptacles for collecting solids.
 - Empty the receptacles frequently to prevent odor and insect problems.
- Inventory all cleaning equipment (such as hoses) provided in the plant:
 - Determine the number and types of units provided.
 - Evaluate their frequency of operation; and
 - Use more water-efficient equipment where possible.
- Inventory all cleaning chemicals used in the facility to determine:
 - Are they are being used correctly?
 - Are they water use efficient?
 - Control belt sprays with a timer to allow for the intermittent application for chlorinated water.

EXTERIOR AREAS

- Discontinue using water to clean sidewalks, driveways, loading docks, and parking lots.
- Consider using mobile sweepers and vacuums.
- Wash company vehicles often.
- Avoid plant fertilizing and pruning that would stimulate excessive growth.
- Remove weeds and unhealthy plants so remaining plants can benefit from the water saved.
- In many cases, older, established plants require only infrequent irrigation. Look for indications of water need, such as wilt, change of color, or dry soils.
- Limit landscaping additions and alterations. In the future, design landscapes requiring less water.
- Install soil moisture overrides or timers on sprinkler systems.
- Time watering, when possible, to occur in the early morning or evening when evaporation is lowest.
- Make sure irrigation equipment applies water uniformly.
- Mulch around plants to reduce evaporation and discourage weeds.
- Remove thatch and aerate turf to encourage the movement of water to the root zone.
- Begin a flexible watering schedule, watering only when needed, and not on windy or rainy days.
- Avoid runoff and make sure sprinklers cover just the lawn or garden, not sidewalks, driveways, or gutters.



WATER SAVING TIPS FOR GOLF COURSES AND INDUSTRIAL LANDSCAPES

START A WATER CONSERVATION PROGRAM

- Increase employee awareness of water conservation.
- Install signs encouraging water conservation in employee and customer restrooms.
- When cleaning with water is necessary, use budgeted amounts.
- Read water meter weekly to monitor success of water conservation efforts.
- Assign an employee to monitor water use and waste.
- Seek employee suggestions on water conservation; locate suggestion boxes in prominent areas.
- Determine the quantity and purpose of water being used.
- Determine other methods of water conservation.

SURVEY THE FACILITY

- Identify water source points.
- Develop a schematic of all water entry points (know where your faucets, time clock, solenoids, booster pumps, sprinklers and bubblers are located).
- Identify capacity of each water-carrying unit and frequency of use. Determine specific use for each entry source.

INTERIOR AREAS

- Discontinue continuous flow.
- Use ponded water where available.
- Adjust flows to reduce discharge of water.
- Install water-waving devices to decrease water consumption:
 - Restrooms (toilet dams and flappers), faucets (aerators), cooling systems.
- Use recycling systems for chillers and cooling towers.
- Consider installing energy- and water-efficient air conditioning equipment.
- Conservation suggestions for clubhouse areas are contained in the "Restaurants" and "Hotels and Motels" checklists.

MAINTENANCE PROCEDURES

- Sweep materials from floor instead of washing down whenever possible.
- Instruct clean-up crews to use less water where appropriate.
- Check water supply system for leaks.
- Repair dripping faucets and continuously-running or leaking toilets.

DESIGN AND MAINTENANCE CRITERIA FOR TURF AND LANDSCAPE AREAS

- Contact your local water supplier about possible landscape water auditor classes for your golf course managers.
- Hire a golf course and/or landscape architect with water conservation and xeriscape experience.

- Use turf only where actually necessary; such as picnic areas/outside lunch areas and golf course target areas (greens, tees, landing areas).
- Limit or exclude turf from roughs.
- Use only low-water use plant material in non-turf areas.
- Use automatic irrigation systems monitored by moisture probes (i.e., tensiometers).
- Design dual watering system with sprinklers for turf and low-volume irrigation for plants, trees, and shrubs.
- Operate sprinkler system before sunrise and after sunset. Amount of irrigation can be determined by the evapotranspiration rate.
- Use properly-treated waste water for irrigation where available.

EXTERIOR AREAS

- Discontinue using water to clean sidewalks, tennis courts, pool decks, driveways, and parking lots.
- Stop irrigation water from running onto streets and alleys.



WATER SAVING TIPS FOR HEALTH CARE FACILITIES

GENERAL SUGGESTIONS

- Increase employee awareness of water conservation.
- Seek employee suggestions on water conservation; locate suggestion boxes in prominent areas.
- Conduct contests for employees (e.g., posters, slogans, or conservation ideas).
- Determine other methods of water conservation.
- Install signs encouraging water conservation in employee and customer restrooms.
- When cleaning with water is necessary, use budgeted amounts.
- Read water meter weekly to monitor success of water conservation efforts.
- Assign an employee to monitor water use and waste.
- Determine the quantity and purpose of water being used.
- Install signs encouraging water conservation in patient and non-patient rooms and restrooms.
- Use glass/ceramic cups for drinking water instead of free-flowing drinking fountains.

BUILDING MAINTENANCE

- Check water supply system for leaks and turn off any unnecessary flows.
- Repair dripping faucets, showers and continuously running or leaking toilets.
- Reduce the water used in toilet flushing by either adjusting the vacuum flush mechanism or installing toilet tank displacement devices (dams, bottles, or bags).
- Install flow reducers and faucet aerators in all plumbing fixtures whenever possible. As fixtures wear out, replace them with water saving models.
- Shut off water supply to equipment and rooms not in use.
- Discontinue water circulation pumping in unoccupied areas.
- Ensure return of steam condensate to the feed water tank for re- use.
- Shut off spray coil units, except where humidity in critical areas cannot be maintained by other means or where the units are used to reduce chiller operation.
- Keep hot water pipes insulated.
- Avoid excessive boiler and air conditioner blow down. Monitor total dissolved solids levels and blow down only when needed.
- Minimize the water used in cooling equipment, such as air compressors, in accordance with the manufacturer recommendations.

CAFETERIA AND KITCHEN AREAS

- Turn off the continuous flow used to clean the drain trays of the coffee/milk/soda beverage island.
- Turn dishwasher off when not in use. Wash full loads only.
- Use water from steam tables to wash down cooking area.
- Do not use running water to melt ice or frozen foods. If necessary, use ponded water.
- Use water-conserving ice makers.

- Provide table signs in cafeteria urging water conservation.
- Wash vegetables in ponded water; do not let water run in preparation sink.
- Recycle rinse water from the dishwasher.

LAUNDRY FACILITIES

- Reprogram machines to eliminate a rinse or suds cycle, if possible, and not restricted by health regulations.
- Reduce water levels, where possible, to minimize water required per load of washing.
- Wash full loads only.
- Evaluate wash formula and machine cycles for water use efficiency.

OPERATIONS

- Turn off water required for film processing or cooling in the X-ray department when not in use.
- Recycle water where feasible, consistent with state and county requirements.
- Use full loads in sanitizer, sterilizer, dishwasher, and washing machine consistent with infection control requirements.
- Overhaul faulty steam traps on sterilizers.
- As appliances or fixtures wear out, replace with water-saving models.
- Reduce the load on air conditioning units by shutting off air conditioning when and where it is not needed.
- Recover condensate from air conditioners, refrigerators, freezers, and ice machines; use it as make-up water.

EXTERIOR AREAS

- Inventory outdoor water use for landscaped areas.
- Do not water landscape every day; two-to-three times a week is usually sufficient.
- Wash vehicles less often.
- Discontinue using water to clean sidewalks, driveways, loading docks, and parking lots.
- Consider using brooms or motorized sweepers.
- Stop hosing down sidewalks, driveways, and parking lots.
- Avoid plant fertilizing and pruning that would stimulate excessive growth.
- Remove unhealthy plants so remaining plants can benefit from the water saved.
- In many cases, older, established plants require only infrequent irrigation. Look for indications of water need, such as wilt, change of color, or dry soils.
- Install soil moisture overrides or timers on sprinkler systems. Time watering, when possible, to occur in the early morning or evening when evaporation is lowest.
- Ensure that irrigation equipment applies water uniformly.
- Investigate the advantages of installing drip irrigation systems.
- Mulch around plants to reduce evaporation and discourage weeds.
- Remove thatch and aerate turf to encourage the movement of water to the root zone.
- Avoid runoff and make sure sprinklers cover just the lawn or garden, not sidewalks, driveways, or gutters.
- Do not water on windy days.

WATER SAVING TIPS FOR HOTELS AND MOTELS

GENERAL SUGGESTIONS

- Increase employee awareness of water conservation.
- Seek employee suggestions on water conservation; locate suggestion boxes in prominent areas.
- Conduct contests for employees (e.g., posters, slogans, or conservation ideas) to increase conservation participation.
- Install signs encouraging water conservation in employee and customer restrooms.
- When cleaning with water is necessary, use budgeted amounts.
- Read water meter weekly to monitor success of water conservation efforts.
- Assign an employee to monitor water use and waste.
- Determine the quantity and purpose of water being used.
- Determine other methods of water conservation.

BUILDING MAINTENANCE

- Check water supply system for leaks and turn off any unnecessary flows.
- Repair dripping faucets, showers and continuously running or leaking toilets.
- Install flow reducers and faucet aerators in all plumbing fixtures whenever possible.
- Reduce the water used in toilet flushing by either adjusting the vacuum flush mechanism or installing toilet tank displacement devices (dams, bottles, or bags).
- As appliances or fixtures wear out, replace them with water-saving models.
- Shut off water supply to equipment rooms not in use.
- Minimize the water used in cooling equipment, such as air compressors, in accordance with the manufacturer recommendations.
- Reduce the load on air conditioning units by shutting air conditioning off when and where it is not needed.
- Keep hot water pipes insulated.
- Avoid excessive boiler and air conditioner blow down. Monitor total dissolved solids levels and blow down only when needed.
- Instruct clean-up crew to use less water for mopping.
- Switch from wet or steam carpet cleaning methods to dry powder methods.
- Change window cleaning schedule from periodic to an on-call/as required basis.

POOLS

- Channel splashed-out pool water onto landscaping.
- Lower pool water level to reduce amount of water splashed out.
- Use a pool cover to reduce evaporation when pool is not being used.
- Reduce the amount of water used to clean pool filters.

KITCHEN AREA

- Turn off the continuous flow used to clean the drain trays of the coffee/milk/soda beverage island; clean the trays only as needed.
- Turn dishwasher off when not in use. Wash full loads only.
- Replace spray heads to reduce water flow. If necessary, use ponded water. Use water from steam tables to wash down cooking area.
- Do not use running water to melt ice or frozen foods.
- Use water-conserving ice makers.
- Recycle water where feasible, consistent with state and county requirements.
- Recycle rinse water from the dishwasher or recirculate it to the garbage disposer.
- Presoak utensils and dishes in ponded water instead of using a running water rinse.
- Wash vegetables in ponded water; do not let water run in preparation sink.
- Use water from steam tables in place of fresh water to wash down the cooking area.

BAR

- Do not use running water to melt ice in the sink strainers.

LAUNDRY

- Reprogram machines to eliminate a rinse or suds cycle, if possible, and not restricted by health regulations.
- Reduce water levels, where possible, to minimize water required per load of washing. Wash full loads only.
- Evaluate wash formula and machine cycles for water use efficiency.

EXTERIOR AREAS

- Do not water landscape every day; two-to-three times a week is usually sufficient.
- Stop hosing down sidewalks, driveways, and parking lots.
- Wash autos, buses, and trucks less often.
- Avoid plant fertilizing and pruning that would stimulate excessive growth.
- Remove weeds and unhealthy plants so remaining plants can benefit from the water saved.
- In many cases, older, established plants require only infrequent irrigation. Look for indications of water need, such as wilting, change of color, or dry soils.
- Install soil moisture overrides or timers on sprinkler systems. Time watering, when possible, to occur in the early morning or evening when evaporation is lowest.
- Make sure irrigation equipment applies water uniformly. Investigate the advantages of installing drip irrigation systems.
- Mulch around plants to reduce evaporation and discourage weeds.
- Remove thatch and aerate turf to encourage the movement of water to the root zone.
- Avoid runoff and make sure sprinklers cover just the lawn or garden, not sidewalks, driveways, or gutters.

WATER SAVING TIPS FOR LAUNDRIES AND LINEN SUPPLIERS

GENERAL SUGGESTIONS

- Increase employee awareness of water conservation.
- Conduct contests for employees (e.g., posters, slogans, or conservation ideas.)
- Seek employee suggestions on water conservation; locate suggestion boxes in prominent areas.
- Install signs in employee and customer restrooms encouraging water conservation.
- When cleaning with water is necessary, use budgeted amounts.
- Read water meter weekly to monitor success of water conservation efforts.
- Assign an employee to monitor water use and waste.
- Determine the quantity and purpose of water being used. Determine other methods of water conservation.
- As appliances and fixtures wear out, replace with water-saving models.

BUILDING MAINTENANCE

- Reduce the load on air conditioning units by shutting off air conditioning when and where it is not needed.
- Check water supply system for leaks and turn off any unnecessary flows.
- Repair dripping faucets, showers and continuously running or leaking toilets.
- Reduce the water used in toilet flushing by either adjusting the vacuum flush mechanism or installing toilet tank displacement devices (dams, bottles, or bags).
- As appliances or fixtures wear out, replace them with water-saving models.
- Shut off water supply to equipment rooms not in use.
- Keep hot water pipes insulated.
- Avoid excessive boiler and air conditioner blow down. Monitor total dissolved solids levels and blow down only when needed.
- Install flow reducers and faucet aerators in all plumbing fixtures whenever possible. Avoid excessive filter or softener back flush. Back flush only when needed.

OPERATIONS

- Recycle water where feasible consistent with state and county requirements.
- Reprogram machines to eliminate a rinse or suds cycle, if possible, and if not restricted by health regulations.
- Reduce water levels to minimize required water per load.
- Evaluate wash formula and machine cycles for water-use efficiency.
- Wash full loads only.

EXTERIOR AREAS

- Inventory outdoor water use for landscaped areas.
- Water landscapes only when needed; two-to-three times a week is usually sufficient.
- Make sure water does not run into the gutters, streets, or alleys.

- Use controllers on sprinkler systems.
- Wash autos, buses, and trucks less often.
- Do not water on windy days.
- Time watering, when possible, to occur in the early morning or evening when evaporation is lowest.

* Adapted from the Maryland Department of the Environment's commercial water conservation brochures.