Large hospitals employ many water-use functions, such as those of the hospitality industry, food service, industrial laundry, image processing for x-rays, morgue, sterilizing, water purification, vacuum systems, cooling towers and boilers, as well as hygiene practices for patients, staff, and facilities.

Plumbing

Appropriate technologies include high-efficiency toilets requiring not more than 1.3 gallons per flush and urinals which flush with 1 gallon or less (no automatically timed flushing systems), as well as self-closing faucets with flows of 0.5 gallons per minute (gpm) for hand washing. If available, and where codes and health departments permit, non-potable water may be used for flushing.

Cooling and Heating Systems

Refer to the “Office Buildings” and “Schools” summaries for recommendations on evaluating cooling towers versus air-cooling, open- versus closed-loop systems, and heat and hot-water system practices.

Water Treatment

Use water treatment only when necessary.

Special Purposes and Equipment

All stand-alone steam sterilizers should be equipped with condensate-tempering systems. All vacuum sterilizers should be equipped with mechanical vacuum systems. Promote use of condensate-return systems for sterilizers.

For X-rays, MRI, CT scans, and other imaging, employ digital technologies that allow images to be displayed on electronic video screens and stored on computer files. Where film imaging is required, use self-contained “mini-lab” image-developing units that require no plumbing or washing to develop the film. Produce paper or film copies of images using laser or ink-jet printing technology. Where large x-ray film technologies are retained, employ Water Saver/Plus™ recycling technology to vastly reduce water waste.
Install dry-vacuum systems instead of liquid-ring pumps. All vacuum and compressor systems should be air-cooled or use a radiator cooler or a chilled-loop or cooling-tower system. **MED**

Generally, all equipment should be energy-efficient to reduce waste heat, which may otherwise require larger water technologies such as cooling towers.

Air cooling is more water efficient rather than recirculating cooling-water systems. Absolutely avoid once-through cooling with potable water. **FOOD**

### Ice Machines

Ice machines are located in many places throughout hospitals. Select:

- ice-making machines that are air-cooled, using remote heads to expel warm air outside the work space and customer areas. Air-cooled machines are preferred over cooling-tower loops.
- energy-efficient flake or nugget machines rather than cube-ice machines. If cube-ice machines are used, those that meet CEE Tier 2 efficiency standards are preferred. Tier 3 machines are even more efficient (CEE Commercial Kitchens). **FOOD**

### Floor Cleaning

Recommendations for floor cleaning include:

- may use wet methods, but wasteful open hoses are discouraged.
- install drains close to areas where liquid discharges are expected. **PROC**
- arrange equipment for easy use of a mop and squeegee system or floor-cleaning machine.
- install self-closing nozzles, limiting flow to 5 gpm on wash-down hoses. **FOOD**
Many modern imaging techniques use electronic technologies that go straight to film or computer files that can be displayed or printed on paper. These avoid using water-based processes, saving both water use and wastewater generation.