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Design Build Guidance Criteria
Water Efficiency Requirements

The following requirements shall be included in the project in addition to requirements in the *Facilities Standards for the Public Buildings Service* (P100); any discrepancy should be referred to the PMO and the Chief Engineer for guidance. This guidance applies to all water-consuming devices/equipment within project scope. Deviation from these requirements requires approval from the Regional Recovery Executive.

1. Irrigation for Landscaping

1.1. **General Criteria:** Any irrigation system shall use non-potable water wherever feasible.

1.2. **Metering:** Irrigation water using domestic potable shall be metered to avoid user sewage fees.

1.3. **Controls:** Any irrigation system shall be controlled by a smart controller that uses evapotranspiration and weather data to adjust irrigation schedules and that complies with the minimum requirements below when tested in accordance with IA Smart Water Application Technology (SWAT) Climatological Based Controllers 7th Draft Testing Protocol. All such control systems shall also incorporate an on-site rain or moisture sensor that automatically shuts the system off after a predetermined amount of rainfall or sensed moisture in the soil.

- Irrigation adequacy – 80 percent minimum ET.
- Irrigation excess – not to exceed 10 percent.

2. Domestic Water Supply Systems

2.1. Domestic Cold Water Service: Meters with remote capability shall be provided to collect water use data for each water supply source (e.g. domestic potable water, reclaimed water, rainwater) to the building that exceeds the following thresholds. Utility company service entrance/interval meters are allowed to be used.

Water Supply Source Meter Thresholds

Water Source	Main Metering Threshold
Domestic potable water	1,000 gal/day (3,800 L/day)
Municipally reclaimed water	1,000 gal/day (3,800 L/day)
Alternate sources of water	500 gal/day (1,900 L/day)

Provide sub-metering with remote metering to collect water use data for each building subsystem meeting the following thresholds.

Subsystem Water Metering Thresholds

Subsystem	Sub-Metering Threshold
Cooling towers (Meter on Make-up water)	Primary flow through tower(s) > 500 gpm (30 L/s)
Evaporative coolers	Makeup water > 0.6 gpm (0.04 L/s)
Steam and hot-water boilers	> 500,000 BTU/h (50 kW) input
Irrigated landscape area with controllers	> 25,000 ft ^{2} (2,500 m ^{2})
Separate campus or project buildings	Consumption > 1,000 gal/day (3,800 L/day)
Separately leased or rental space	Consumption > 1,000 gal/day (3,800 L/day)
Any large water using process	Consumption > 1,000 gal/day (3,800 L/day)

All building meters and sub-meters shall be configured to communicate water consumption data to a meter data management system which shall be capable of electronically storing data and creating user reports showing calculated hourly, daily, monthly and annual water consumption for each meter and sub-meter.

2.2. Domestic Hot Water Service: Solar thermal water heaters to meet at least 30% of the hot water demand shall be included, when lifecycle cost effective per EISA 2007. Provide documentation of analysis.

2.3. Plumbing Fixtures

2.3.1. General: Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following requirements:

2.3.1.1. Water closets (toilets) – flushometer valve type: For single flush, maximum flush volume when determined in accordance with ASME A112.19.2 –1.28 gal (4.8 L). For dual-flush, effective flush volume determined in accordance with ASME A112.19.14 and USEPA WaterSense Tank-Type High Efficiency Toilet Specification – 1.28 gal (4.8 L).

2.3.1.2. High Efficiency Toilets (HET) / Water closets – tank-type: Tank-type water closets shall comply with the performance criteria of the U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification.

2.3.1.3. High Efficiency Urinals (HEU): Maximum flush volume when determined in accordance with ASME A112.19.2 – 0.5 gal (1.9 L). Non-water urinals shall comply with ASME A112.19.19 (vitreous china) or IAPMO Z124.9 (plastic) as appropriate.

2.3.1.4. Public lavatory faucets: Maximum flow rate – 0.5 gpm (1.9 L/min) when tested in accordance with ASME A112.18.1/CSA B125.1.

2.3.1.5. Public metering self-closing faucet: Maximum water use – 0.25 gal (1.0 L) per metering cycle when tested in accordance with ASME A112.18.1/CSA B125.1.

Note: All retrofits in existing buildings must investigate the condition of existing drain lines before installation. If a documented history of drainage problems exists, then the GSA Regional Energy Program Coordinator may allow installation of fixtures that comply with the Energy Policy Act of 1992. In new construction designers must place other water consuming fixtures (e.g. lavatories) upstream of high-efficiency toilets and high-efficiency urinals and must provide drainline slopes greater than 1 percent.

3. Water Use Reduction in HVAC Systems and Equipment

3.1. Condensate: Condensate from air conditioning units with a capacity greater than 65,000 Btu/h (19 kW) and from all steam systems shall be recovered for re-use as graywater, where economically feasible.

3.2. Cooling Towers: Once-through cooling with potable water is not allowed.

3.2.1. Cooling towers and evaporative coolers shall be equipped with makeup and blowdown meters, conductivity controllers and overflow alarms. Cooling towers shall be equipped with efficient drift eliminators that achieve drift reduction to a maximum of 0.002% percent of the recirculated water volume for counterflow towers and 0.005% of the recirculated water flow for cross-flow towers.

3.3. Commercial Food Service Operations: Commercial food service operations (e.g. restaurants, cafeterias, food preparation kitchens, etc.) shall include the following where applicable:

- High-efficiency pre-rinse spray valves (i.e. valves which function at 1.3 gpm (4.9 L/min) or less and comply with a 26-second performance requirement when tested in accordance with ASTM F2324),
- Dishwashers that comply with the requirements of the USEPA Energy Star Program for Commercial Dishwashers,
- Boilerless/connectionless food steamers that consume no more than 2.0 gal/hour (7.5 L/hour) in the full operational mode,
- Combination ovens that consume not more than 10 gal/hour (38 L/hour) in the full operational mode,
- Air-cooled ice machines that comply with the requirements of the USEPA Energy Star Program for Commercial Ice Machines, and
- Hands-free faucet controllers (foot controllers, sensor-activated, or other) for all faucet fittings within the food preparation area of the kitchen and the dish room, including pot sinks and washing sinks.