

## DEMAND SIDE ENERGY MANAGEMENT AND CONSERVATION PROGRAM Measurement and Verification Program

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### Water Conservation Upgrades Savings Calculation Steps and Parameters:

1. Pre-retrofit (domestic fixtures) - Measure toilet and urinal flush volumes
  - a. Units: gallon per flush (gpf)
  - b. Measured by flushing fixture directly into a calibrated bucket via the fixture's discharge tube
2. Pre-retrofit (domestic fixtures) - Measure faucet and showerhead flow rates
  - a. Units: gallons per minute (gpm)
  - b. Measured using a micro weir device
3. Pre-retrofit (domestic fixtures) - Utilize standardized usage data from the American Water Works Association Research Foundation (AwwaRF) and building demographics for savings calculations
4. Post-retrofit (domestic fixtures) - Measure fixture performance in same manner as pre-retrofit; calculate savings in room by room spreadsheet
5. Pre-retrofit (Process water audit) – Walk buildings, interview occupants, observe/measure usage to determine inputs for calculating estimated savings.
6. Deliverables
  - a. All Measurement & Verification (M&V) deliverables as follows to be included in a separate tab(s) of the final as-built domestic water fixture room-by-room inventory spreadsheet:
    - i. Pre-retrofit flow measurements for sampled toilet and urinal valves, faucets and showerheads
    - ii. Post-retrofit flow measurements for sampled toilet and urinal valves, faucets and showerheads
    - iii. [Summary savings report](#)
  - b. Process equipment upgrades – Provide savings report as standalone worksheet.
  - c. For each of the items above, the M&V deliverables requested here meet FEMP's intent for a "Post-Installation Report."