Design Fixture Units:

In plumbing, a **Fixture Unit** (FU) is 'a **unit** of measure, based on the rate of discharge, time of operation and frequency of use of a **fixture**, that expresses the hydraulic load imposed by that **fixture** on the sanitary plumbing installation.' A **Fixture Unit** is not a flow rate **unit** but a **design** factor.

Table 1.8 Design flow rates and loading units

Outlet fitting	Design flow rate (l/s)	Minimum flow rate (l/s)	Loading units
WC flushing cistern single or dual flush (to fill in 2 min.)	0.13	0.05	2
WC trough cistern	0.15 per WC	0.10	2
Wash basin tap size ½-DN 15	0.15 per tap	0.10	1.5-3.0
Spray tap or spray mixer	0.05 per tap	0.30	—
Bidet	0.2 per tap	0.10	1
Bath tap, ¾-DN 20	0.30	0.20	10
Bath tap, 1-DN 25	0.60	0.40	22
Shower head (will vary with type of head)	0.2 hot or cold	0.10	3
Sink tap, ½-DN 15	0.20	0.10	3
Sink tap, ¾-DN 20	0.30	0.20	5
Washing machine size – DN 15	0.2 hot or cold	0.15	—
Dishwasher size – DN 15	0.15	0.10	3
Urinal flushing cistern	0.004 per position	0.002	—

(Source: Gunen P. H. 2008. *Hot and Cold Water Supply*)

Type of Fixtures	Fixture-Unit Value Hot	Cold	Combined
Bathtub (with/without overhead showerhead)	1.0	1.0	1.4
Clothes washer	1.0	1.0	1.4
Dishwasher	1.4	–	1.4
Hose bibb (sillcock)	–	2.5	2.5
Kitchen sink	1.0	1.0	1.4
Lavatory	0.5	0.5	0.7
Laundry tub	1.0	1.0	1.4
Shower stall	1.0	1.0	1.4
Water closet (tank type)	–	2.2	2.2
Full-bath group with bathtub (with/without showerhead) or shower stall	1.5	2.7	3.6
Half-bath group (water closet and lavatory)	0.5	2.5	2.6
Kitchen group (dishwasher and sink with/without garbage grinder)	1.9	1.0	2.5
Laundry group (clothes washer standpipe and laundry tub)	1.8	1.8	2.5

Sometimes they use the term Drainage fixture units

Table 709.1
Drainage Fixture Units for Fixtures and Groups

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS
Automatic clothes washers, commercial	3
Automatic clothes washers, residential	2
Bathroom group as defined in Section 202 (1.6 gpf water closet)	5
Bathroom group as defined in Section 202 (water closet flushing greater than 1.6 gpf)	6
Bathtub (with or without overhead shower or whirlpool attachments)	2
Bidet	1
Combination sink and tray	2
Dental lavatory	1
Dental unit or cuspidor	1
Dishwashing machine, domestic	2
Drinking fountain	½
Emergency floor drain	0
Floor drains	2
Kitchen sink, domestic	2
Kitchen sink, domestic w/food waste grinder and/or dishwasher	2
Laundry tray (1 or 2 compartments)	2
Lavatory	1
Shower	2
Sink	2
Urinal	4
Urinal, 1 gallon per flush or less	2
Wash sink (circular or multiple) each set of faucets	2
Water closet, flushometer tank, public or private	4
Water closet, private (1.6 gpf)	3
Water closet, private (flushing greater than 1.6 gpf)	4
Water closet, public (1.6 gpf)	4
Water closet, public (flushing greater than 1.6 gpf)	6

King County near Seattle has the following website for DFUs

https://www.kingcounty.gov/depts/health/environmental-health/piping/plumbing/water-supply-fixture-units.aspx

Chesapeake VIRGINIA

Related PERMIT #_____

DEPARTMENT OF DEVELOPMENT AND PERMITS

P. O. Box 15225
Chesapeake, VA 23328

Tel. 382-6018
Fax 382-8448
Inspection Request: 382-2489
www.cityofchesapeake.net/ebuild

Email: permitsupport@cityofchesapeake.net

Date:_____

APPLICATION FOR PLUMBING PERMIT

Address_____ Suite/Lot #_____

Project Name: _____

CONTRACTOR;_____ CONTRACTOR LIC. #_____A B C

Owner _____ Phone: _____

Master Plumber/Signature_____ Phone_____

PRINT Signature Name_____ Tradesman Lic#_____

Email:_____

Structure is: _____**New** _____**Foundation** _____**Existing** _____**Addition** _____**Moved**

_____**Residential** _____**Commercial** _____**Industrial** _____**Mobile Home/Trailer**

Code Used: _____**USBC** _____**International Res. Code (IRC)** _____**International Plumbing Code (IPC)**

NUMBER AND KIND OF PLUMBING FIXTURES

All installations must comply with Federal, State and Local Codes and Ordinances.

Backflow Prev. _____	Floor Drain _____	Sewer _____Size_____
Bar Sink _____	Kitchen Sink _____	Showers _____
Bath Tub _____	Lndry. Tub _____	Urinals _____
Bidet _____	Lavatory (Bath sink)_____	Washing Mach _____
Dishwasher _____	Medical Gas _____	Water Closet (toilet)_____
Disposal _____	Mop Sink _____	Water Line _____ Size ____
Drink. Fount. _____	Roof Drains _____	Water Heater _____indicate type & location

_____Gas _____Electric

Location _____Attic ____Garage_____in house

Replace Interior Water Lines (Quest Pipe)_____

Others: _____ ____

Total Fixture(s) _____ Late Fee _____ Contract Value $_____

MINIMUM PERMIT FEE $40.00 PLUS 2% STATE LEVY AND $5.00 TECHNOLOGY FEE.

If application is not complete, it may be returned resulting in a delay in issuance. ****Additional Fees may apply upon inspection****

The code official shall be notified when the construction reaches the stage of completion for an inspection. The permit holder shall assure that the inspections have been conducted and approved by the code official when applicable. A certificate of occupancy, indicating completion of the work for which a permit was issued, shall be obtained prior to any occupancy. I understand that the permit is granted for the work shown and described in this application. Any falsification, misrepresentation or misleading information given **VOIDS** the permit.

City of Los Angeles

FIXTURE UNIT DETERMINATION CHART

Customer's Name _____ Date _____
Service Address _____ Account No. _____
_____ Telephone No. _____

PREMISES IS USED FOR: (Check applicable box)

☐ Single Family Resident; ☐ Commercial; ☐ Public (School, etc.); ☐ Other purposes (Describe);

☐ This property has onsite fire protection flow requirement served through the domestic meter of ___ gallons per minute.

☐ This property does not have any onsite fire protection requirements served through the domestic meter.

MINIMUM METER SIZE BASED ON PLUMBING FIXTURE UNITS, SIZE OF SERVICE AND PRESSURE

To determine the minimum meter size allowable under the County of Los Angeles Plumbing Code, the total number of fixture units on the premises must first be determined. First, insert the number of each type of fixture on your premises under the column headed "Quantity". Second, multiply the quantity by the number of fixture units given under either column "Private Use" or "Public Use", whichever is applicable. Third, post the result in the "Total column". Finally total that column in the box down below.

Types of Fixtures	EQUIVALENT FIXTURE UNITS (Includes Combined Hot and Cold Water Demand) Private Use	Public Use		Quantity		Total
Bar Sink	1	2	X	_____	=	_____
Bathtub (with or without shower over)	2	4	X	_____	=	_____
Dental unit or cuspidor	-	1	X	_____	=	_____
Drinking fountain (each head)	1	2	X	_____	=	_____
Hose bibb (standard type faucet)	3	5	X	_____	=	_____
House trailer (each)	6	6	X	_____	=	_____
Laundry tub or clothes washer	2	4	X	_____	=	_____
Lavatory	1	2	X	_____	=	_____
Lavatory (dental)	1	2	X	_____	=	_____
Lawn sprinklers (standard type each head)	1	1	X	_____	=	_____
Shower (each head)	2	4	X	_____	=	_____
Sink (bar)	1	2	X	_____	=	_____
Sink or dishwasher	2	4	X	_____	=	_____
Sink (flushing rim, clinic)	-	10	X	_____	=	_____
Sink (washup, each set of faucets)	-	2	X	_____	=	_____
Sink (washup, circular spray)	-	4	X	_____	=	_____
Toilet (flush tank)	3	5	X	_____	=	_____
Toilet (flushometer valve)	6	10	X	_____	=	_____
Urinal (pedestal or similar type)	-	10	X	_____	=	_____
Urinal (stall or wall)	-	5	X	_____	=	_____
Urinal (flush tank)	-	3	X	_____	=	_____
Other (please specify) _____			X	_____	=	_____

Water supply outlets for items not listed above shall be computed at their maximum demand, but in no case less than:

3/8 inch	1	2	X	_____	=	_____
½ inch	2	4	X	_____	=	_____
¾ inch	3	6	X	_____	=	_____
1 inch	6	10	X	_____	=	_____

TOTAL FIXTURE UNITS _____

Then measure the approximate distance between the water meter and the most distant fixture.
Insert distance in _____ feet from water meter to furthest fixture.