

Department of Water Supply

WATER METER SIZING WORKSHEET - NON-RESIDENTIAL

Project Name: _____ Building Permit No.(if applicable): _____
 Contact Name: _____ Phone No.: _____ Email Address: _____
 Property Address: _____ TMK: _____
 Account Number: _____ Meter Number: _____ Existing Meter Size: _____

INSTRUCTIONS: This form must be completed, signed and stamped by a licensed engineer or architect. Complete the items below and submit one Water Meter Sizing Worksheet for each water meter on the property as applicable. Refer to page 2 for additional information and requirements. Should you have any questions, please contact the DWS Engineering Division at 808-270-7835.

1 ZERO WATER USE SCENARIO? YES NO

By selecting "YES", the applicant signing this worksheet certifies that no additional water demand is being added, removed or replaced with this application. If you propose zero water use you do not need to complete below items 2, 3, 4 and 5.

2 DOMESTIC WATER DEMAND? YES NO If yes, refer to note 2H on page 2 and indicate if the flush valve or tank values apply: _____

Type of Fixture	Fixtures Added		Fixtures in Existing Structure ^ψ				Fixtures Removed if Applicable				Total Fixtures				Fixture Unit Multiplier				Total Fixture Unit Values
	PR LF	PU LF	PRIVATE LF	NLF	PUBLIC LF	NLF	PRIVATE LF	NLF	PUBLIC LF	NLF	PRIVATE LF	NLF	PUBLIC LF	NLF	PRIVATE LF	NLF	PUBLIC LF	NLF	
Bathtub/Shower COMBO														x	1.6	2.0	3.2	4.0	
Showerheads in stall only														x	1.6	2.0	3.2	4.0	
Bathtub ONLY														x	1.6	2.0	3.2	4.0	
Sink (1 faucet)														x	1.6	2.0	3.2	4.0	
Sink, small (bar/hand)														x	0.6	1.0	1.2	2.0	
Sink (3-comp., 2-faucet)														x	3.2	4.0	6.4	8.0	
Lavatory Sink														x	0.6	1.0	1.2	2.0	
Urinal														x	1.7	3.0	2.8	5.0	
Water Closet (Toilet) - FT														x	1.7	3.0	2.8	5.0	
Water Closet (Toilet) - FV														x	3.4	6.0	5.6	10.0	
Bidet														x	2.0	2.0	4.0	4.0	
Laundry Tray/Tub														x	1.6	2.0	3.2	4.0	
Washing Machine														x	2.0	2.0	4.0	4.0	
Dishwasher														x	2.0	2.0	4.0	4.0	
Drinking Fountain (single)														x	1.0	1.0	2.0	2.0	
Ice Machine														x	1.0	1.0	1.0	1.0	
Soda Machine														x	1.0	1.0	1.0	1.0	
Trap Primer														x	1.0	1.0	1.0	1.0	
Hose Bib														x	3.0	3.0	5.0	5.0	
Other: _____														x					

^ψDate Existing Fixtures Verified by Applicant: ____/____/____

Existing Fixture Unit Total (if applicable): _____

DOMESTIC WATER DEMAND FIXTURE UNIT TOTAL: _____

DOMESTIC WATER DEMAND FIXTURE UNIT TOTAL CONVERTED TO GPM*: _____

**Refer to Table 2 on Page 2 for Flow to Fixture Unit Conversions.*

3 SWIMMING POOL/SPA/TANK & OTHER MISCELLANEOUS WATER DEMAND? YES NO

Swimming Pool/Spa/Tank: Please indicate how your swimming pool/spa/tank is to be filled: Hose Bib or Dedicated Line. If filled by hose bib, no additional water demand is assessed. If filled by dedicated water line, please provide the required flow rate in GPM: _____

Other Miscellaneous Water Demand: Attach detailed justification information sufficient to describe the water demand. Total proposed GPM: _____

SWIMMING POOL/SPA/TANK & OTHER MISCELLANEOUS WATER DEMAND TOTAL IN GPM: _____

4 IRRIGATION WATER DEMAND? YES NO

Option A: State the measured flow rate for the largest separate circuit of your irrigation system in GPM: _____

Option B: Describe the largest separate circuit. Provide the number of sprinkler heads _____ and rated flow in GPM per head _____ to obtain a total flow rate in GPM: _____. Attach additional sheets as necessary to sufficiently justify the proposed irrigation water demand.

IRRIGATION WATER DEMAND TOTAL IN GPM: _____

5 TOTAL WATER DEMAND in GPM (the sum of total GPM from above items 2, 3 and 4): _____

Verify the total water demand is within your existing meter's capacity, otherwise a meter upgrade may be required. Refer to Note K on Page 2 for additional information.

6 CERTIFICATION: I certify that the above water demand is the **TOTAL AMOUNT OF WATER DEMAND ON THE METER**. If I intend to create additional water demand on the property, I will inform the Department of Water Supply prior to creating any additional water demand.

Applicant's Signature: _____ Date: _____ Seal/Stamp: _____

Print Name: _____

If this form is to be signed by an authorized representative, written evidence of authority to represent the applicant shall be provided.

WATER METER SIZING WORKSHEET ADDITIONAL INFORMATION

NON-RESIDENTIAL

NOTES:

- ② **A. Domestic Water Demand Calculation:** Complete the columns of the chart by supplying the quantity and type of fixtures being added, remaining, and/or removed. Accuracy of the fixture count is necessary to determine the appropriate meter size and GPM. Refer to Table 1 below for details on Meter Sizing. For new facilities, all quantities for all proposed fixtures shall be provided.
- ② **B. Low Flow ("LF") vs. Non-low Flow ("NLF"):** All water fixtures manufactured after 1992 are low flow fixtures. For applications that propose to receive fixture unit credits for changing non-low flow fixtures to low-flow fixtures, photographs of certain fixtures may be required by DWS to obtain the appropriate fixture unit credits.
- ② **C. Fixtures Added:** In this column, list the number of new fixtures or the number of fixtures being added to an existing project under the appropriate fixture type.
- ② **D. Fixtures in Existing Structure:** In this column, list the number of fixtures that will remain and/or that will be relocated during and preceding the construction phase of the project. For existing facilities, "Fixtures in Existing Structure" may alternatively be provided as a total sum of fixture units in the space provided on page 1. Applicant shall provide the date the existing fixtures were field verified in the space provided on page 1.
- ② **E. Fixtures Removed if Applicable:** In this column, list the number of fixtures that are actually being removed which will create a reduction in the water demand. If water fixtures are being demolished, photographs of the water fixtures may be required by DWS to obtain the appropriate fixture unit credits.
- ② **F. Fixture Unit Multiplier:** Each plumbing fixture is given a fixture unit value. Fixture units are used for water meter sizing purposes. The unit count for each fixture is determined by multiplying the number of each fixture type by the appropriate number in the multiplier column.
- ② **G. Public ("PU") vs. Private ("PR") Fixture Unit Determination:** Public Fixture Units are for fixtures used by the general public, whereas Private Fixture Units are for fixtures not available for public use.
- ② **H. Flush Tank ("FT") vs. Flush Valve ("FV") Fixture Unit Determination:** The predominant type of water closet (a.k.a. "toilet") fixture will determine the Fixture Unit values utilized for your application. Please refer to the following two examples for further explanation. Both examples assume the application contains 10 low flow private water closets with different quantities of flush tanks and flush valves:
Example 1: 6 Flush Tanks x 1.7 FU's = 10.2 FU's compared to 4 Flush Valves x 3.4 FU's = 13.6 FU's. Because 13.6 > 10.2, Flush Valve Fixture Units will apply to this application. The total FU's = 23.8 FU's, using below Table 2, 23.8 FU's = 37.4 GPM.
Example 2: 7 Flush Tanks x 1.7 FU's = 11.9 FU's compared to 3 Flush Valves x 3.4 FU's = 10.2 FU's. Because 11.9 > 10.2, Flush Tank Fixture Units will apply to this application. The total FU's = 22.1 FU's, using below Table 2, 22.1 FU's = 15.6 GPM.
Interpolation of GPM between values included in Table 2: For values between values included in Table 2, linear interpolation should be used to determine the exact GPM. For example 2, the following calculation was performed for reference: $GPM = 16 - (16 - 15) \times ((23 - 22.1) / (23 - 21)) = 15.6$ GPM.

TABLE 1 - Meter Sizing			
Meter Size	Maximum Capacity (GPM)	Fixture Units	
		Flush Tank	Flush Valve
5/8"	20	31	-
3/4"	30	53	13
1"	50	128	48
1-1/2"	100	380	245
2"	160	692	631
3"	320	1926	1926
4"	500	3620	3620
6"	1000	8300	8300
8"	1600	12000	12000

Table 2 - Flow to Fixture Unit Conversions**											
Flow GPM	Fixture Units		12	16	-	26	44	9	40	86	28
	Flush Tank	Flush Valve	13	18	-	27	46	10	41	90	30
1	0	-	15	21	-	29	51	12	43	99	33
2	1	-	16	23	-	30	53	13	44	103	35
3	3	-	17	24	-	31	56	14	45	107	37
4	4	-	18	26	-	32	58	15	46	111	39
5	6	-	19	28	-	33	60	16	47	115	42
6	7	-	20	31	-	34	63	18	48	119	44
7	8	-	21	32	-	35	66	20	49	123	46
8	10	-	22	34	5	36	69	21	50	128	48
9	12	-	23	36	6	37	74	23	51	130	50
10	13	-	24	39	7	38	78	25	52	135	52
11	15	-	25	42	8	39	83	26	53	141	54

** Additional flow to Fixture Unit Conversions for higher flows are available upon request.
 Refer to above Note 2H to determine if the Flush Tank or Flush Valve fixture units apply to your application.

- ③ **Other Miscellaneous Water Demand:** There are some process water demands that are not listed, such as car washes, industrial sized washing machines, etc. Each of these will be assessed on a case by case basis by DWS and assigned either a fixture unit value or demand in GPM. Refer to Table 2 above.
- ④ **Irrigation Water Demand:** The largest separate circuit of your irrigation system can not exceed half of the water meter's maximum capacity. For example, a 5/8" water meter is allowed 10 GPM maximum water demand for the largest separate circuit of a proposed irrigation system.

OTHER NOTES:

- I. Water Meter and Other DWS Fee's:** The total cost of the various size water meters and other fee's are determined on a fiscal year annual basis ending June 30 and beginning on July 1 of each year. Detail of the fees are included in the County Maui Revenues - Fees, Rates, Assessments and Taxes for the current year are available on the County Maui website on the following link: <http://www.co.maui.hi.us/index.aspx?NID=216>
- J. DWS Agreements:** Provide copies of any existing DWS related agreements that apply to your property and/or water meter(s) with your application. DWS will require an elevation agreement be in place prior to installation of water meter(s) and approval of building permits if the available water pressure is less than 40 PSI at the proposed connection point. Other DWS agreements may be required based on your application and will be determined on a case by case basis.
- K. Water System Improvements ("WSI"):** Applications may require WSI and will be determined on a case by case basis. For non-residential applications, if fixture units are increasing or additional water demand is proposed, WSI's will be required to bring the water system to current DWS Standards. DWS Standards are available for purchase by contacting the DWS Fiscal Division at 808-270-7730, extension 2.