



Instructions for Completing Water Meter Sizing Worksheet (1.5" or larger meter)

W-4

Phone 503-823-7368 • Email devrev@portlandoregon.gov

The Water Meter Sizing Worksheet helps determine the water meter size needed for projects requiring new or upsized water services.

Who needs to complete this form?

Complete this form if you have new construction, alterations, additions, or tenant improvements for projects requiring a metered service that is 1.5" or larger.

Potential commercial building permit applicants may also complete this worksheet in pre-planning or planning stages. If you are interested in Systems Development Charges related to such a project, please feel free to complete the worksheet and contact Portland Water Bureau's Development Services staff. Our staff can discuss water services and meter configurations that might meet your needs, and can answer questions related to the water service portion of building permits.

What kind of information does this worksheet request?

The Meter Sizing Worksheet is an inventory of the plumbing fixtures being served by one or more water meters. **All fixtures that are plumbed to a meter need to be accounted for in the worksheet.**

Each fixture is given a value based on typical water use. Follow the instructions to determine the water meter size that will be required for your site. You may calculate Total Fixture Unit Values and then match this value to the meter size. **You will need to report all fixtures served by your water meter, both existing and proposed (not just new fixtures).**

Please note that if your project includes flushometer-style toilets or urinals, the exact fixture count will need to be calculated by Water Bureau staff according to current Oregon Plumbing Specialty Code. Unit values vary for these types of toilets/urinals depending on the number of fixtures.

Where do I send the worksheet?

Applicants for commercial building permits typically submit this form with the Systems Development Charge Form, Commercial Projects packet, available at Bureau of Development Services. You may also be asked to submit this form to your building permit reviewer or at the time of application for service.

Portland Water Bureau Development Services

Please feel free to contact the Water Bureau Development Services group should you need assistance.

Phone: 503-823-7368

Email: devrev@portlandoregon.gov

Mailing address:

Portland Water Bureau Development Services
1900 SW 4th Ave, Suite 4800
Portland, OR 97201

Walk-in Assistance:

1900 SW 4th Avenue, 1st Floor DSC
For hours of operation call 503-823-7310, option 1



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Revised: June 2019 According to 2017 OPSC

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Building Permit Number	Service Address
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(1) Type of Fixture	(2) Total Fixtures in New/Remodeled Structure	(3) Fixture Values	(4) Total Fixture Unit Value
Bar sink		x 2.0	=
Bathtub or Tub/Shower	30	x 4.0	= 120
Clinic Sink		x 3.0	=
Clothes Washer	30	x 4.0	= 120
Dishwasher		x 1.5	=
Drinking Fountain		x 0.5	=
Hose Bibb, 1 st one	NA	x 2.5	=
Hose Bibb, each additional		x 1.0	=
Kitchen Sink		x 1.5	=
Laundry Sink		x 1.5	=
Lavatory Sink	53	x 1.0	= 53
Mop or Service Sink		x 3.0	=
Shower	23	x 2.0	= 46
Urinal, 1st one		x 20.0*	=
Urinal, each additional		x 15.0*	=
Water Closet	53	x 2.5*	= 132.5
Water Closet, Flushometer Valve - 1st one		x 40.0*	=
Water Closet, Flushometer - each additional		x 25.0*	=
			Total Fixture Units: 471.5

***Note:** Fixture units for flushometers are approximate values. Values will be reviewed and may be adjusted by the Portland Water Bureau staff based on 2017 Oregon Plumbing Specialty Code Table 610.10

Instructions

Column 2: Enter the total number of each fixture type for the completed project. If the project has an existing structure that will be using the same water meter, enter the total number of each fixture type for the completed project (**existing and proposed**).

Column 3: Per unit value of each fixture type

Column 4: Enter the number of column 2 times column 3

Total Fixture Unit Count	Required Meter Size
0 - 22	5/8" meter
22.5 - 37	3/4" meter
37.5 - 89	1" meter
89.5 - 286	1.5" meter
286.5 - 532	2" meter
532.5 - 1,300	3" meter
1,300.5 - 3600	4" meter
3,600.5 - 8,200	6" meter

Note: There may be SDC credit if existing meters are utilized or removed. SDC fees are not assessed to fire lines. Fees are due at the time the water service installation is paid. Call Portland Water Bureau Development Services, 503-823-7368 with any questions.



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Bathtub or Tub/Shower		x 4.0 =	
Clinic Sink		x 3.0 =	
Clothes Washer	2 Hotel (4)	x 4.0 =	8
Dishwasher	4(1.4)	x 1.5 =	5.6
Drinking Fountain		x 0.5 =	
Hose Bibb, 1 st one	NA	x 2.5 =	
Hose Bibb, each additional	NA	x 1.0 =	
Kitchen Sink	8 rest.	x 1.5 =	12
Laundry Sink	3 rest. 3 hotel	x 1.5 =	9
Lavatory Sink	15 rest./hotel 28 guest(1)	x 1.0 =	33
Mop or Service Sink	3 rest 3 hotel	x 3.0 =	18
Shower		x 2.0 =	
Urinal, 1st one		x 20.0* =	
Urinal, each additional		x 15.0* =	
Water Closet	16 pub.(2.2) 28 guest(1)	x 2.5* =	63.2
Water Closet, Flushometer Valve - 1st one		x 40.0* =	
Water Closet, Flushometer - each additional		x 25.0* =	
Total Fixture Units:			148.8

***Note:** Fixture units for flushometers are approximate values. Values will be reviewed and may be adjusted by the Portland Water Bureau staff based on 2017 Oregon Plumbing Specialty Code Table 610.10

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89.5 - 286	1.5" meter
286.5 - 532	2" meter
532.5 - 1,300	3" meter
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Note: There may be SDC credit if existing meters are utilized or removed. SDC fees are not assessed to fire lines. Fees are due at the time the water service installation is paid. Call Portland Water Bureau Development Services, 503-823-7368 with any questions.

TABLE E103.3(2)
LOAD VALUES ASSIGNED TO FIXTURES*

FIXTURE	OCCUPANCY	TYPE OF SUPPLY CONTROL	LOAD VALUES, IN WATER SUPPLY FIXTURE UNITS (wsfu)		
			Cold	Hot	Total
Bathroom group	Private	Flush tank	2.7	1.5	3.6
Bathroom group	Private	Flushometer valve	6.0	3.0	8.0
Bath tub	Private	Faucet	1.0	1.0	1.4
Bath tub	Public	Faucet	3.0	3.0	4.0
Bidet	Private	Faucet	1.5	1.5	2.0
Combination fixture	Private	Faucet	2.25	2.25	3.0
Dishwashing machine	Private	Automatic	—	1.4	1.4
Drinking fountain	Offices, etc.	$\frac{3}{8}$ " valve	0.25	—	0.25
Kitchen sink	Private	Faucet	1.0	1.0	1.4
Kitchen sink	Hotel, restaurant	Faucet	3.0	3.0	4.0
Laundry trays (1 to 3)	Private	Faucet	1.0	1.0	1.4
Lavatory	Private	Faucet	0.5	0.5	0.7
Lavatory	Public	Faucet	1.5	1.5	2.0
Service sink	Offices, etc.	Faucet	2.25	2.25	3.0
Shower head	Public	Mixing valve	3.0	3.0	4.0
Shower head	Private	Mixing valve	1.0	1.0	1.4
Urinal	Public	1" flushometer valve	10.0	—	10.0
Urinal	Public	$\frac{3}{4}$ " flushometer valve	5.0	—	5.0
Urinal	Public	Flush tank	3.0	—	3.0
Washing machine (8 lb)	Private	Automatic	1.0	1.0	1.4
Washing machine (8 lb)	Public	Automatic	2.25	2.25	3.0
Washing machine (15 lb)	Public	Automatic	3.0	3.0	4.0
Water closet	Private	Flushometer valve	6.0	—	6.0
Water closet	Private	Flush tank	2.2	—	2.2
Water closet	Public	Flushometer valve	10.0	—	10.0
Water closet	Public	Flush tank	5.0	—	5.0
Water closet	Public or private	Flushometer tank	2.0	—	2.0

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.

- a. For fixtures not listed, loads should be assumed by comparing the fixture to one listed using water in similar quantities and at similar rates. The assigned loads for fixtures with both hot and cold water supplies are given for separate hot and cold water loads and for total load. The separate hot and cold water loads being three-fourths of the total load for the fixture in each case.

APPENDIX E

TABLE E103.3(3)-continued
TABLE FOR ESTIMATING DEMAND

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSHOMETER VALVES		
Load	Demand		Load	Demand	
(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)	(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)
275	80.0	10.6944	275	104.5	13.96956
300	85.0	11.3628	300	108.0	14.43744
400	105.0	14.0364	400	127.0	16.97736
500	124.0	16.57632	500	143.0	19.11624
750	170.0	22.7256	750	177.0	23.66136
1,000	208.0	27.80544	1,000	208.0	27.80544
1,250	239.0	31.94952	1,250	239.0	31.94952
1,500	269.0	35.95992	1,500	269.0	35.95992
1,750	297.0	39.70296	1,750	297.0	39.70296
2,000	325.0	43.446	2,000	325.0	43.446
2,500	380.0	50.7984	2,500	380.0	50.7984
3,000	433.0	57.88344	3,000	433.0	57.88344
4,000	525.0	70.182	4,000	525.0	70.182
5,000	593.0	79.27224	5,000	593.0	79.27224

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m, 1 cubic foot per minute = 0.28 m³ per minute.

TABLE E103.3(4)
LOSS OF PRESSURE THROUGH TAPS AND TEES IN POUNDS PER SQUARE INCH (psi)

GALLONS PER MINUTE	SIZE OF TAP OR TEE (inches)						
	5/8	3/4	1	1 1/4	1 1/2	2	3
10	1.35	0.64	0.18	0.08	—	—	—
20	5.38	2.54	0.77	0.31	0.14	—	—
30	12.10	5.72	1.62	0.69	0.33	0.10	—
40	—	10.20	3.07	1.23	0.58	0.18	—
50	—	15.90	4.49	1.92	0.91	0.28	—
60	—	—	6.46	2.76	1.31	0.40	—
70	—	—	8.79	3.76	1.78	0.55	0.10
80	—	—	11.50	4.90	2.32	0.72	0.13
90	—	—	14.50	6.21	2.94	0.91	0.16
100	—	—	17.94	7.67	3.63	1.12	0.21
120	—	—	25.80	11.00	5.23	1.61	0.30
140	—	—	35.20	15.00	7.12	2.20	0.41
150	—	—	—	17.20	8.16	2.52	0.47
160	—	—	—	19.60	9.30	2.92	0.54
180	—	—	—	24.80	11.80	3.62	0.68
200	—	—	—	30.70	14.50	4.48	0.84
225	—	—	—	38.80	18.40	5.60	1.06
250	—	—	—	47.90	22.70	7.00	1.31
275	—	—	—	—	27.40	7.70	1.59
300	—	—	—	—	32.60	10.10	1.88

For SI: 1 inch = 25.4 mm, 1 pound per square inch = 6.895 kpa, 1 gallon per minute = 3.785 L/m.

Cottage Fixtures

	Sqaure Footage	No. of Units	Washer	Bathroom sinks	kitchen Sinks	Shower/ Tub	Shower only	Outdoor Fauset
Per Unit	550-1000	7	1	1	1	1		2
Per Unit	1000-1600	23	1	2	1	1	1	2

Totals for 550 - 1000			7	7	7	7		14
totals for 1000 - 1600			23	46	23	23	23	46
Totals			30	53	30	30	23	60

PARKING REQUIREMENTS

BUILDING No. I	Sq. ft. / empld	Section 11.090 Requirements	Number of Parking Sp.
Retail/Wholesale			
Retail Area	4,277	Sec 11.090-5(f)	200
# of employees	8 employees	Sec 11.090-5(f)	1 for 2 emp.
Storage/ Wholesale Area	2,630	Sec 11.090-5(l)	1000
# of employees	1 employee	Sec 11.090-5(l)	1 for 1 emp.
Second Floor-apartments	4 units	Sec 11.090-5(a)	2 for each unit
			8

BUILDING No. II			
Hotel	28 Rooms	Sec 11.090-5(b)	1 for each unit
# of employees	5 employees	Sec 11.090-5(b)	1 for 2 emp.
			28
			3

TOTAL SPACES NEEDED 68

Available Spaces			
In front of Hotel			39
Located on Road			27
Available in service areas			5
		TOTAL SPACES AVAILABLE	71

Schedule of Square Footage

Building #1 - COMMERCIAL BUILDING

FIRST FLOOR	Total	Retail Area	Storage Area	Living Area
<i>Commercial/Seafood Store</i>				
Open Room	1,680	1,680	0	0
Circulation	168	168	0	0
Women's Bathroom	110	0	110	0
Men's Bathroom	110	0	110	0
Spr. Room	30	0	30	0

Sink/Fauset	Toilet	Handwash	3 sink	Dishwasher	Shower/ Tubs
1	1				
1	1				

Janitor Room	40	0	40	0
Retail Space	176	176	0	0
Circulation	100	100	0	0
Kitchen	449	0	449	0
Refrigeration/Freezer	256	0	256	0
Processing	195	0	195	0
Loading/Storage	1,046	0	1,046	0
Electrical Room	<u>90</u>	<u>0</u>	<u>90</u>	<u>0</u>
	4,450	2,124	2,326	0

	1								
	1		1						
				1					
	1				1				
							1		
	1		1						

(first floor continued)

<i>Restaurant</i>				
Kitchen/Prep/Storage	782	782	0	0
Serving Area	1,207	1,207	0	0
Circulation/Stairs	164	164	0	0
Women's Bathroom	56	0	56	0
Men's Bathroom	56	0	56	0
Office Storage	<u>192</u>	<u>0</u>	<u>192</u>	<u>0</u>
	2,457	2,153	304	0
Total First Floor	6,907	4,277	2,630	0

	2		1	1	1				
				1					
	1	1							
	1	1							

SECOND FLOOR

Apartment - #1	715	0	0	715
Apartment - #2	565	0	0	565
Apartment - #3	592	0	0	592
Apartment - #4	547	0	0	547
Stairs	96	0	0	96
Circulation	300	0	0	300
Janitor Room	<u>25</u>	<u>0</u>	<u>0</u>	<u>25</u>
Total Second Floor	2,840	0	0	2,840

	2	1						1	
	2	1						1	
	2	1						1	
	2	1						1	

Total Building Square Footage	9,747	4,277	2,630	2,840
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	19	8	5	2	2	4
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