

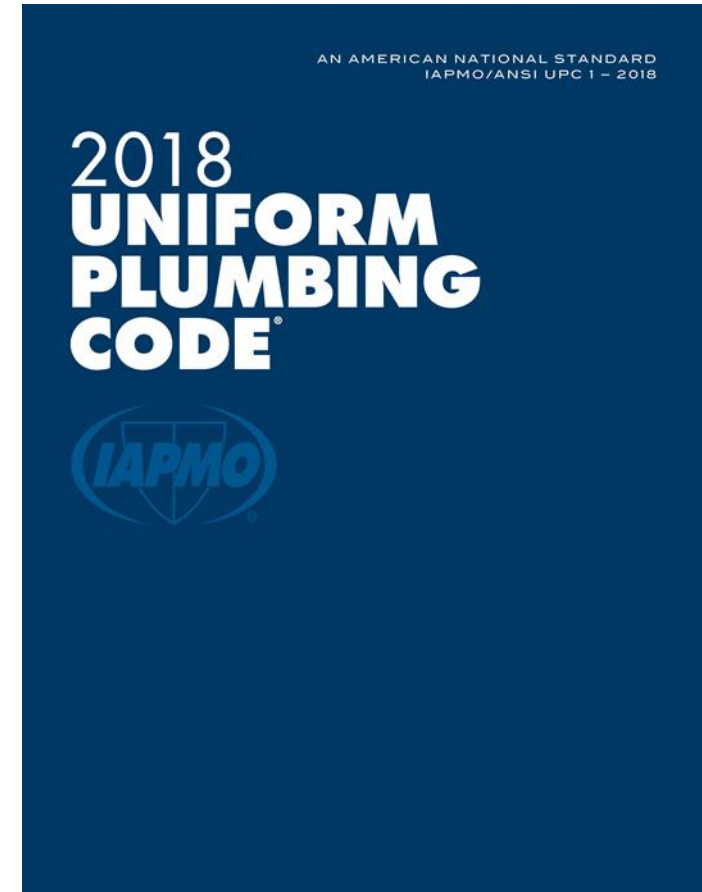
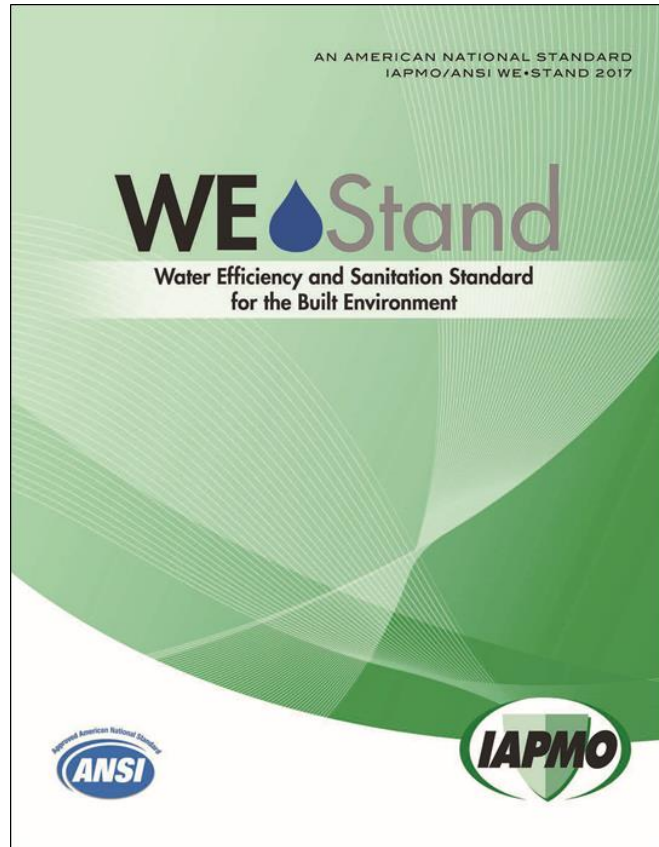
The Future of Estimating Peak Water Demand in the Uniform Plumbing Code

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ACEEE HOT WATER FORUM

MARCH, 2018

Estimating Peak Demand for Residential Dwellings



Water Demand Calculator

Select Units →

	[A] FIXTURE	[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	0.00	1.50
2	Bathtub	0	1.0	0.00	5.50
3	Bidet	0	1.0	0.00	2.00
4	Clothes Washer	0	5.5	0.00	3.50
5	Combination Bath/Shower	0	5.5	0.00	5.50
6	Dishwasher	0	0.5	0.00	1.30
7	Kitchen Faucet	0	2.0	0.00	2.20
8	Laundry Faucet	0	2.0	0.00	2.00
9	Lavatory Faucet	0	2.0	0.00	1.50
10	Shower, per head	0	4.5	0.00	2.00
11	Water Closet, 1.28 GPF Gravity Tank	0	1.0	0.00	3.00
12	Other Fixture 1	0	0.0	0.00	6.00
13	Other Fixture 2	0	0.0	0.00	6.00
14	Other Fixture 3	0	0.0	0.00	6.00

Total Number of Fixtures 0

99th PERCENTILE DEMAND FLOW = GPM

↑ CLICK BUTTON ↑

Basic
Template

Code Provisions

Code Provisions

PEAK WATER DEMAND CALCULATOR

M 101.0 General.

M 101.1 Applicability. This appendix provides a method for estimating the demand load for the building water supply and principal branches for **single- and multi-family dwellings** with **water-conserving** plumbing fixtures, fixture fittings, and appliances.

Code Provisions

M 102.0 Demand Load.

M 102.1 **Water-Conserving Fixtures.**

Plumbing fixtures, fixture fittings, and appliances shall not exceed the **design flow rate** in Table M 102.1.

TABLE M 102.1
DESIGN FLOW RATE FOR WATER-CONSERVING PLUMBING
FIXTURES AND APPLIANCES IN RESIDENTIAL OCCUPANCIES

FIXTURE AND APPLIANCE	MAXIMUM DESIGN FLOW RATE (gallons per minute)
Bar Sink	1.5
Bathtub	5.5
Bidet	2.0
Clothes Washer*	3.5
Combination Bath/Shower	5.5
Dishwasher*	1.3
Kitchen Faucet	2.2
Laundry Faucet (with aerator)	2.0
Lavatory Faucet	1.5
Shower, per head	2.0
Water Closet, 1.28 GPF Gravity Tank	3.0

For SI units: 1 gallon per minute = 0.06 L/s

* Clothes washers and dishwashers shall have an energy star label.

Code Provisions

M 102.2 Water Demand Calculator. The estimated design flow rate for the building supply and principal branches and risers shall be determined by the IAPMO Water Demand Calculator available for download at

www.iapmo.org/WEStand/Pages/WaterDemandCalculator.aspx

Code Provisions

M 102.3 Meter and Building Supply. To determine the design flow rate for the **water meter and building supply**, enter the total number of **indoor** plumbing fixtures and appliances for the building in Column [B] of the Water Demand Calculator and run Calculator. See Table M 102.3 for an example.

TABLE M 102.3
WATER DEMAND CALCULATOR EXAMPLE

[A] FIXTURE		[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIX- TURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	1.5	1.5
2	Bath tub	0	1.0	5.5	5.5
3	Bidet	0	1.0	2.0	2.0
4	Clothes Washer	1	5.5	3.5	3.5
5	Combination Bath/Shower	1	5.5	5.5	5.5
6	Dishwasher	1	0.5	1.3	1.3
7	Kitchen Faucet	1	2.0	2.2	2.2
8	Laundry Faucet	0	2.0	2.0	2.0
9	Lavatory Faucet	1	2.0	1.5	1.5
10	Shower, per head	0	4.5	2.0	2.0
11	Water Closet, 1.28 GPF Gravity Tank	1	1.0	3.0	3.0
12	Other Fixture 1	0	0.0	0.0	6.0
13	Other Fixture 2	0	0.0	0.0	6.0
14	Other Fixture 3	0	0.0	0.0	6.0
Total Number of Fixtures		6		RESET	RUN WATER DEMAND CALCULATOR
99th Percentile Demand Flow =		8.5 GPM			

Code Provisions

M 102.4 Fixture Branches and Fixture Supplies. To determine the design flow rate for **fixture branches and risers**, enter the total number of plumbing fixtures and appliances for the fixture branch or riser in Column [B] of the Water Demand Calculator and run Calculator. The flow rate for **one fixture branch** and **one fixture supply** shall be the design flow rate of the fixture according to Table M 102.1.

TABLE M 102.1
DESIGN FLOW RATE FOR WATER-CONSERVING PLUMBING
FIXTURES AND APPLIANCES IN RESIDENTIAL OCCUPANCIES

FIXTURE AND APPLIANCE	MAXIMUM DESIGN FLOW RATE (gallons per minute)
Bar Sink	1.5
Bathtub	5.5
Bidet	2.0
Clothes Washer*	3.5
Combination Bath/Shower	5.5
Dishwasher*	1.3
Kitchen Faucet	2.2
Laundry Faucet (with aerator)	2.0
Lavatory Faucet	1.5
Shower, per head	2.0
Water Closet, 1.28 GPF Gravity Tank	3.0

For SI units: 1 gallon per minute = 0.06 L/s

* Clothes washers and dishwashers shall have an energy star label.

Code Provisions

M 102.5 Continuous Supply Demand. Continuous supply demands in gallons per minute (gpm) for lawn sprinklers, air conditioners, hose bibbs, etc., shall be added to the total estimated demand for the building supply as determined by Section M 102.3. Where there is more than one hose bibb installed on the plumbing system, the demand for only one hose bibb shall be added to the total estimated demand for the building supply. Where a hose bibb is installed on a fixture branch, the demand of the hose bibb shall be added to the design flow rate for the fixture branch as determined by Section M 102.4.



Code Provisions

M 102.6 Other Fixtures. Fixtures not included in Table M 102.1 shall be added in **Rows 12 through 14** in the Water Demand Calculator as Other Fixture. The probability of use and flow rate for Other Fixtures shall be added by selecting a comparable probability of use and flow rate from Columns [C] and [E].

Select Units →

GPM

LPM

LPS

	[A] FIXTURE	[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	0.00	1.50
2	Bathtub	0	1.0	0.00	5.50
3	Bidet	0	1.0	0.00	2.00
4	Clothes Washer	0	5.5	0.00	3.50
5	Combination Bath/Shower	0	5.5	0.00	5.50
6	Dishwasher	0	0.5	0.00	1.30
7	Kitchen Faucet	0	2.0	0.00	2.20
8	Laundry Faucet	0	2.0	0.00	2.00
9	Lavatory Faucet	0	2.0	0.00	1.50
10	Shower, per head	0	4.5	0.00	2.00
11	Water Closet, 1.28 GPF Gravity Tank	0	1.0	0.00	3.00
12	Dog Bath	1	0.5	3.50	6.00
13	Pot Filler	1	2.0	3.00	6.00
14	Other Fixture 3	0	0.0	0.00	6.00

Total Number of Fixtures2

99th PERCENTILE DEMAND FLOW =GPM

RESET

RUN WATER
DEMAND
CALCULATOR

↑ CLICK BUTTON ↑

Code Provisions

M 102.7 Size of Water Piping per Appendix A. Except as provided in Section M 102.0 for estimating the demand load for single- and multi-family dwellings, the size of each water piping system shall be determined in accordance with the procedure set forth in Appendix A. After determining the permissible friction loss per 100 feet of pipe in accordance with Section A 104.0 and the demand flow in accordance with the Water Demand Calculator, the diameter of the building supply pipe, branches and risers shall be obtained from Chart A 105.1(1), Chart A 105.1(2), Chart A 105.1(3), or Chart A 105.1(4), whichever is applicable, in accordance with Section A 105.0 and Section A 106.0. Velocities shall be in accordance with Section A 107.0. Appendix I, Figure 3 and Figure 4 shall be permitted when sizing PEX systems.

M 102.7.1 Minimum Fixture Branch Size. The minimum fixture branch pipe size shall be ½" inch.

APPENDIX A

RECOMMENDED RULES FOR SIZING THE WATER SUPPLY SYSTEM

A 101.0 General.

A 101.1 Applicability. This appendix provides a general procedure for sizing a water supply system. Because of the variable conditions encountered, it is impractical to lay down definite detailed rules of procedure for determining the sizes of water supply pipes in an appendix, which shall necessarily be limited in length. For a more adequate understanding of the problems involved, refer to Water-Distributing Systems for Buildings, Report BMS 79 of the National Bureau of Standards; and Plumbing Manual, Report BMS 66, also published by the National Bureau of Standards.

➤➤ A 102.0 Preliminary Information.

➤➤ **A 102.1 Daily Service Pressure.** Obtain the necessary information regarding the minimum daily service pressure in the area where the building is to be located.

➤➤ **A 102.2 Water Meter.** Where the building supply is to be metered, obtain information regarding friction loss relative to the rate of flow for meters in the range of sizes likely to be used. Friction-loss data is capable of being obtained from most manufacturers of water meters. Friction losses for disk-type meters shall be permitted to be obtained from

respect both to durability and to decrease in capacity with length of service in the particular water supply.

A 103.0 Demand Load. <<

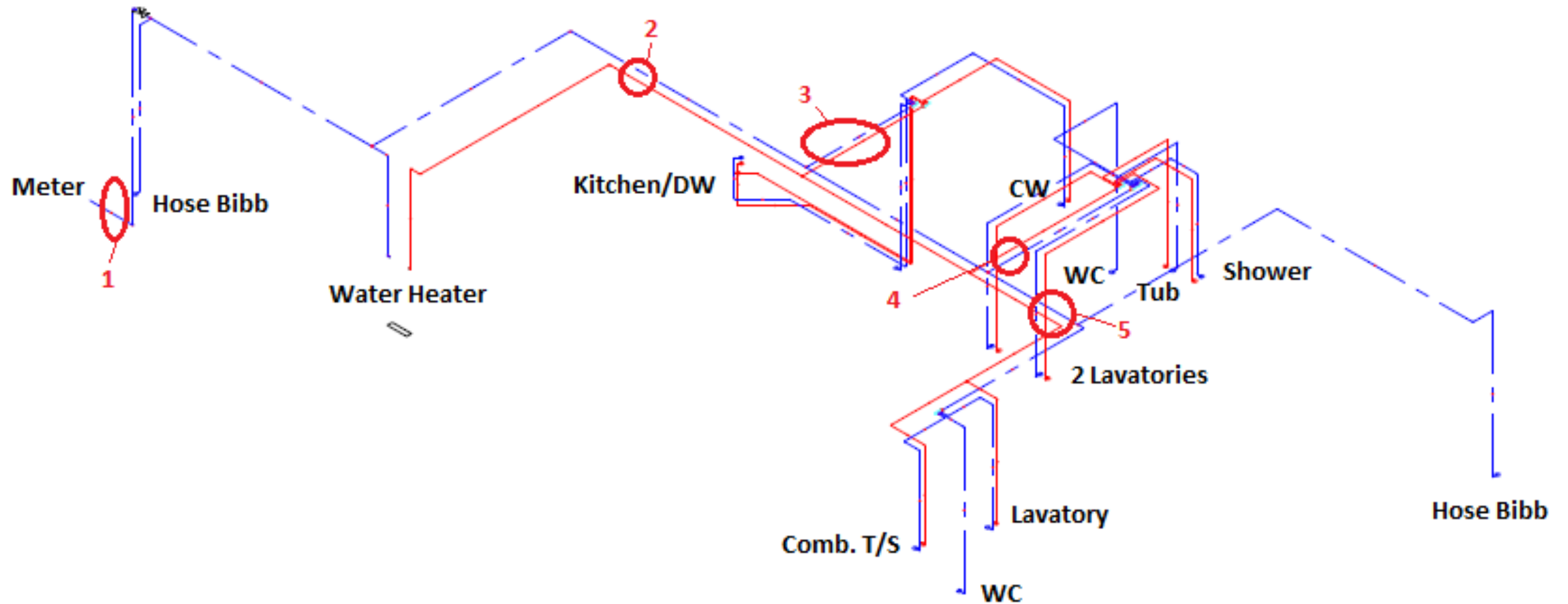
A 103.1 Supply Demand. Estimate the supply demand for the building main, the principal branches and risers of the system by totaling the fixture units on each, Table A 103.1, and then by reading the corresponding ordinate from Chart A 103.1(1) or Chart A 103.1(2), whichever is applicable. <<

A 103.2 Continuous Supply Demand. Estimate continuous supply demands in gallons per minute (gpm) (L/s) for lawn sprinklers, air conditioners, etc., and add the sum to the total demand for fixtures. The result is the estimated supply demand of the building supply. <<

A 104.0 Permissible Friction Loss. <<

A 104.1 Residual Pressure. Decide what is the desirable minimum residual pressure that shall be maintained at the highest fixture in the supply system. Where the highest group of fixtures contains flushometer valves, the residual pressure for the group shall be not less than 15 pounds <<

Application



1. Gather Preliminary Information

Type of Pipe Material	PEX	
Chart for PEX Tubing - UPC Appendix I	Figures 3 and 4	
Permissible Friction Loss		
Pressure Available after the Meter (psi)		60.0
Minimum Residual Pressure (psi)		20.0
Head Loss - Elevation (psi)	9 x 0.433	<u>3.90</u>
Available Pressure for Friction Loss (psi)		36.10
Develop Length - Longest Run (ft)		150
Fitting Allowance for Equivalent Length of Pipe (ft)	10% of Developed Length	<u>15</u>
Total Developed Length (ft)		165
Friction Loss per 100 feet (psi)		21.88

2. Create a Sizing Table UPC Appendix I for PEX Tubing – Cold Supply

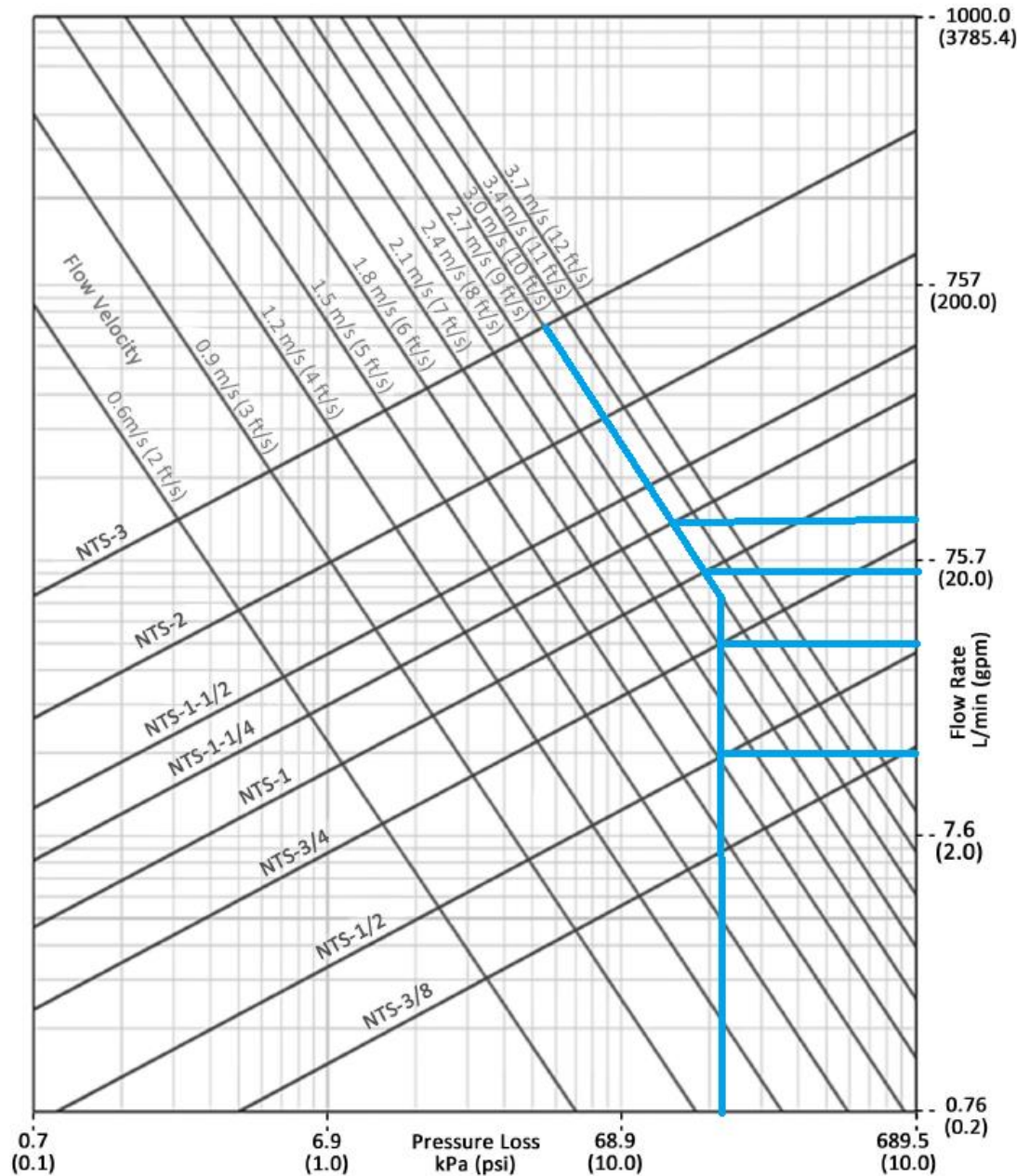


FIGURE 3
PRESSURE LOSS OF PEX TUBING AT 16 °C (60 °F)

Maximum Demand per Pipe Size		
Diameter	Max Cold Demand (gpm) @ 10ft/sec	Max Hot Demand (gpm) @ 8ft/sec
3/8 -inch	-	-
1/2 - inch	4.0	
3/4-inch	10.0	
1-inch	18.0	
1 1/4- inch	30.0	

Create a Sizing Table

UPC Appendix I for PEX

Tubing – Hot Supply

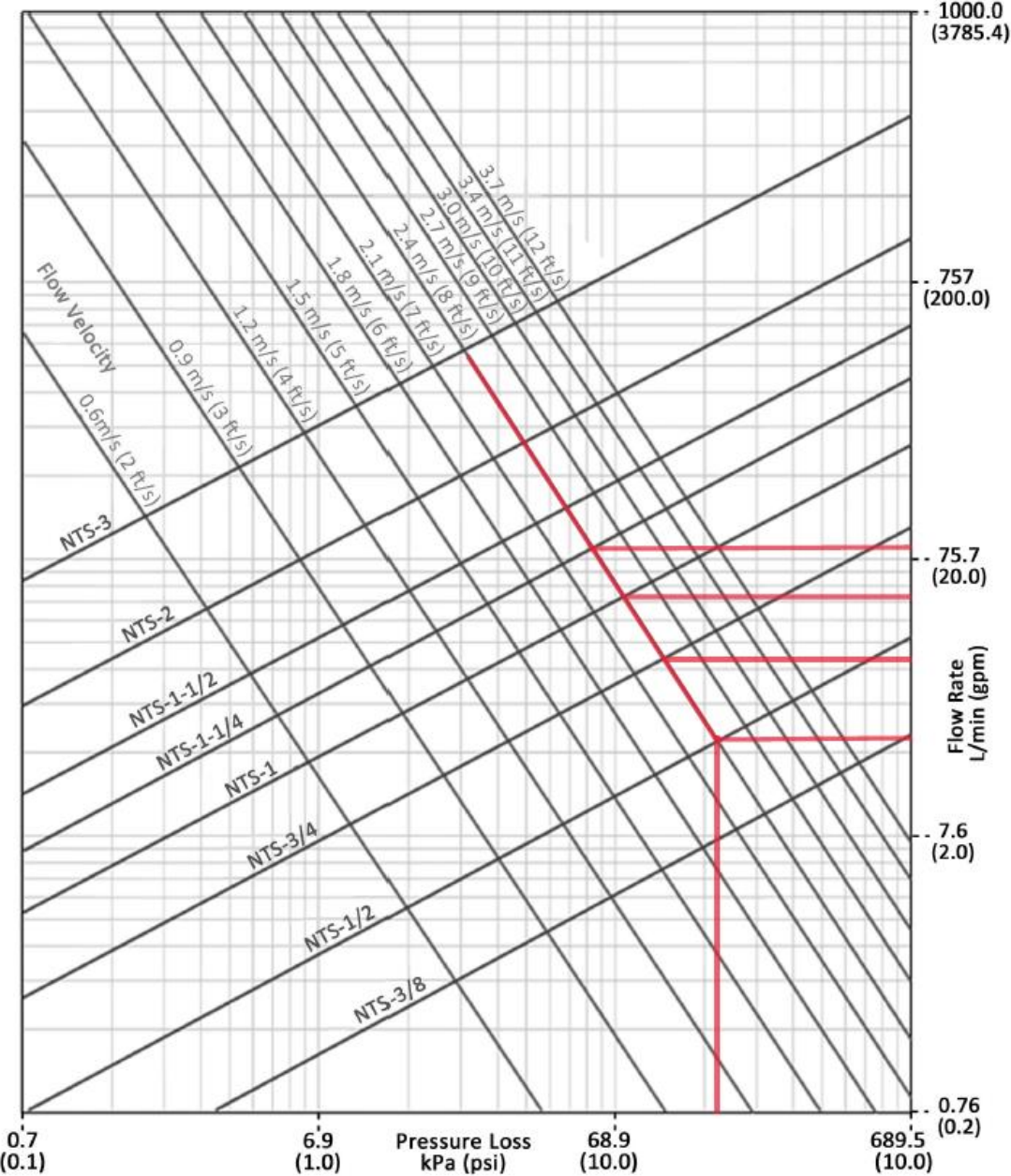


FIGURE 4
PRESSURE LOSS OF PEX TUBING AT 49 °C (120 °F)

Maximum Demand per Pipe Size		
Diameter	Max Cold Demand (gpm) @ 10ft/sec	Max Hot Demand (gpm) @ 8ft/sec
3/8 -inch	-	-
1/2 - inch	4.0	4.5
3/4-inch	10.0	8.6
1-inch	18.0	14.5
1 1/4- inch	30.0	22.5

3. Estimate the Supply Demand

Pipe Section	Cold Demand (GPM)	Cold Pipe Size (Inches)	Hot Demand (GPM)	Hot Pipe Size (Inches)
1	9.0 + 2.5 = 11.5		-	
2				
3				
4				
5				

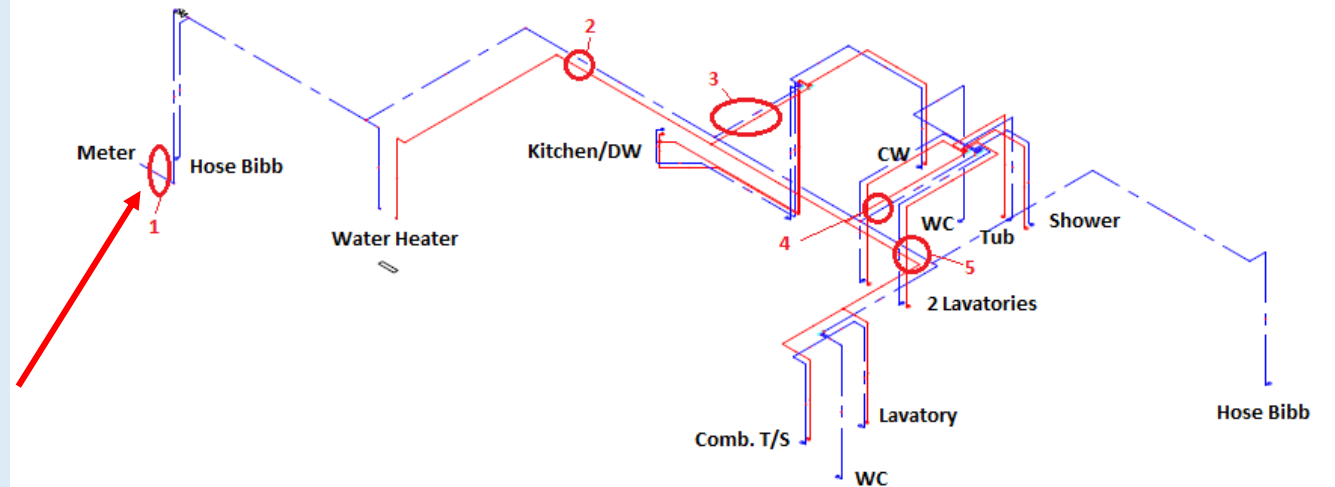
	[A] FIXTURE	[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	1.5	1.5
2	Bathtub	1	1.0	5.5	5.5
3	Bidet	0	1.0	2.0	2.0
4	Clothes Washer	1	5.5	3.5	3.5
5	Combination Bath/Shower	1	5.5	5.5	5.5
6	Dishwasher	1	0.5	1.3	1.3
7	Kitchen Faucet	1	2.0	2.2	2.2
8	Laundry Faucet	0	2.0	2.0	2.0
9	Lavatory Faucet	3	2.0	1.5	1.5
10	Shower, per head	1	4.5	2.0	2.0
11	Water Closet, 1.28 GPF Gravity Tank	2	1.0	3.0	3.0
12	Other Fixture 1	0	0.0	0.0	6.0
13	Other Fixture 2	0	0.0	0.0	6.0
14	Other Fixture 3	0	0.0	0.0	6.0

Total Number of Fixtures 11

99th PERCENTILE DEMAND FLOW = 9.0 GPM

RESET

RUN WATER DEMAND CALCULATOR



Pipe Section	Cold Demand (GPM)	Cold Pipe Size (Inches)	Hot Demand (GPM)	Hot Pipe Size (Inches)
1	9.0 + 2.5 = 11.5		-	
2	9.0 + 2.5 = 11.5		9.0	
3				
4				
5				

Hot Water Estimate

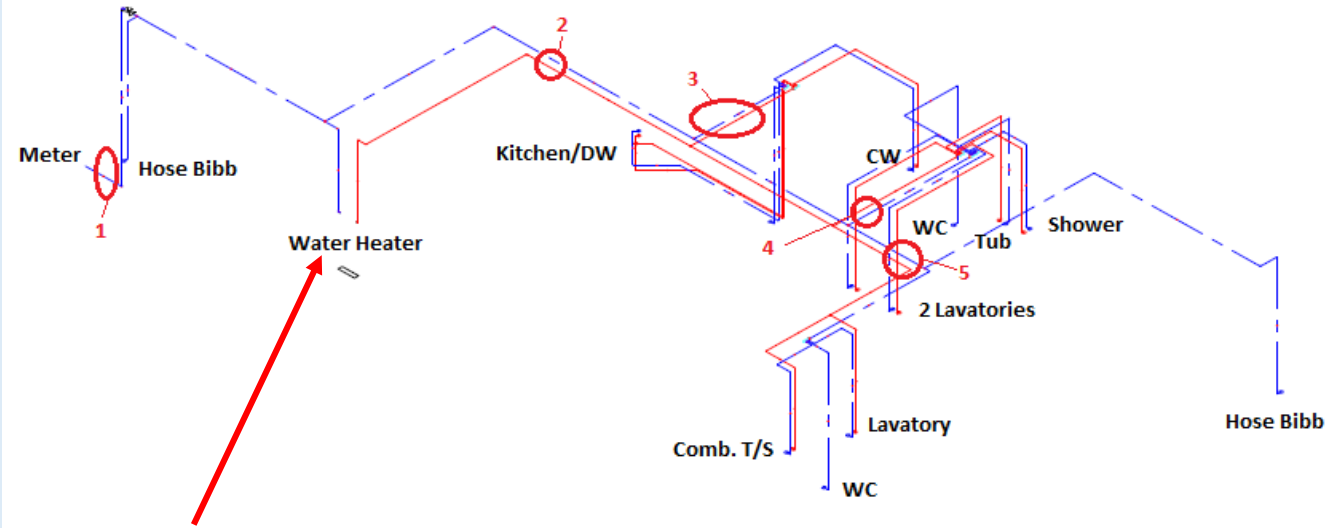
	[A] FIXTURE	[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	1.5	1.5
2	Bathtub	1	1.0	5.5	5.5
3	Bidet	0	1.0	2.0	2.0
4	Clothes Washer	1	5.5	3.5	3.5
5	Combination Bath/Shower	1	5.5	5.5	5.5
6	Dishwasher	1	0.5	1.3	1.3
7	Kitchen Faucet	1	2.0	2.2	2.2
8	Laundry Faucet	0	2.0	2.0	2.0
9	Lavatory Faucet	3	2.0	1.5	1.5
10	Shower, per head	1	4.5	2.0	2.0
11	Water Closet, 1.28 GPF Gravity Tank	0	1.0	3.0	3.0
12	Other Fixture 1	0	0.0	0.0	6.0
13	Other Fixture 2	0	0.0	0.0	6.0
14	Other Fixture 3	0	0.0	0.0	6.0

Total Number of Fixtures9

99th PERCENTILE DEMAND FLOW = 9.0 GPM

RESET

RUN WATER DEMAND CALCULATOR



Pipe Section	Cold Demand (GPM)	Cold Pipe Size (Inches)	Hot Demand (GPM)	Hot Pipe Size (Inches)
1	9.0 + 2.5 = 11.5		-	
2	9.0 + 2.5 = 11.5		9.0	
3	3.5		4.8	
4				
5				

Hot Water Branch Estimate

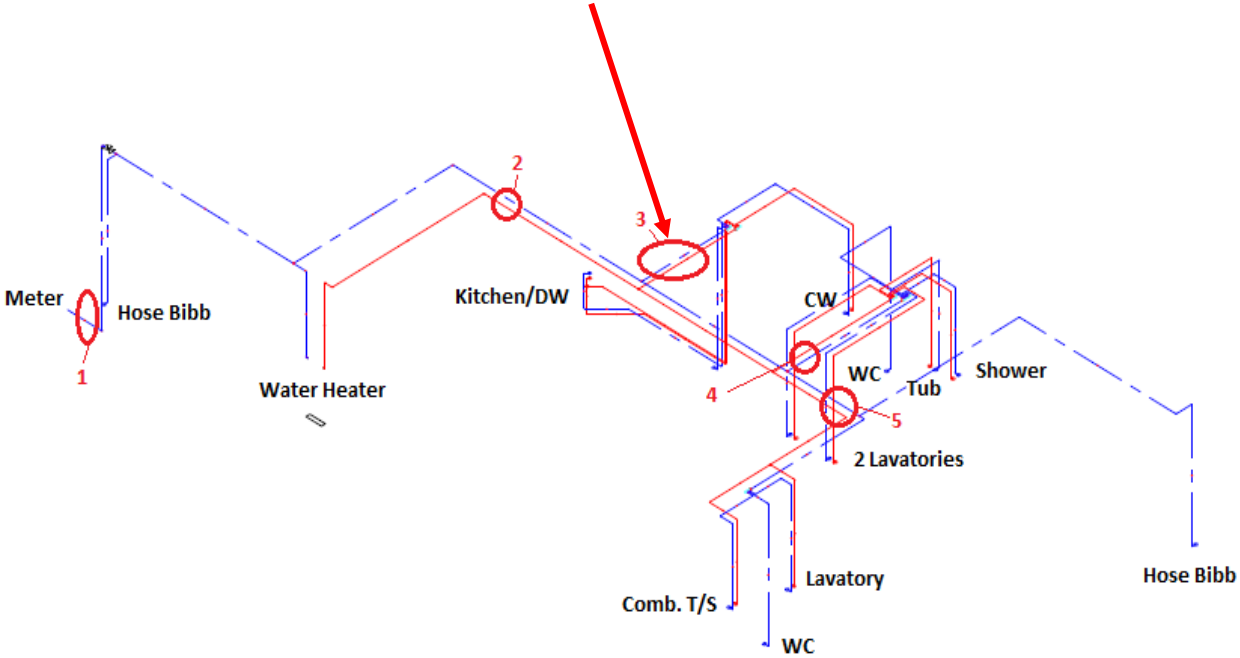
[A]	FIXTURE	[B]	ENTER NUMBER OF FIXTURES	[C]	PROBABILITY OF USE (%)	[D]	ENTER FIXTURE FLOW RATE (GPM)	[E]	MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink		0		2.0		1.5		1.5
2	Bathtub		0		1.0		5.5		5.5
3	Bidet		0		1.0		2.0		2.0
4	Clothes Washer		1		5.5		3.5		3.5
5	Combination Bath/Shower		0		5.5		5.5		5.5
6	Dishwasher		1		0.5		1.3		1.3
7	Kitchen Faucet		1		2.0		2.2		2.2
8	Laundry Faucet		0		2.0		2.0		2.0
9	Lavatory Faucet		0		2.0		1.5		1.5
10	Shower, per head		0		4.5		2.0		2.0
11	Water Closet, 1.28 GPF Gravity Tank		0		1.0		3.0		3.0
12	Other Fixture 1		0		0.0		0.0		6.0
13	Other Fixture 2		0		0.0		0.0		6.0
14	Other Fixture 3		0		0.0		0.0		6.0

Total Number of Fixtures3

99th PERCENTILE DEMAND FLOW = 4.8 GPM

RESET

RUN WATER DEMAND CALCULATOR



Pipe Section	Cold Demand (GPM)	Cold Pipe Size (Inches)	Hot Demand (GPM)	Hot Pipe Size (Inches)
1	9.0 + 2.5 = 11.5		-	
2	9.0 + 2.5 = 11.5		9.0	
3	3.5		4.8	
4	7.5		7.0	
5				

Cold Water Branch Estimate

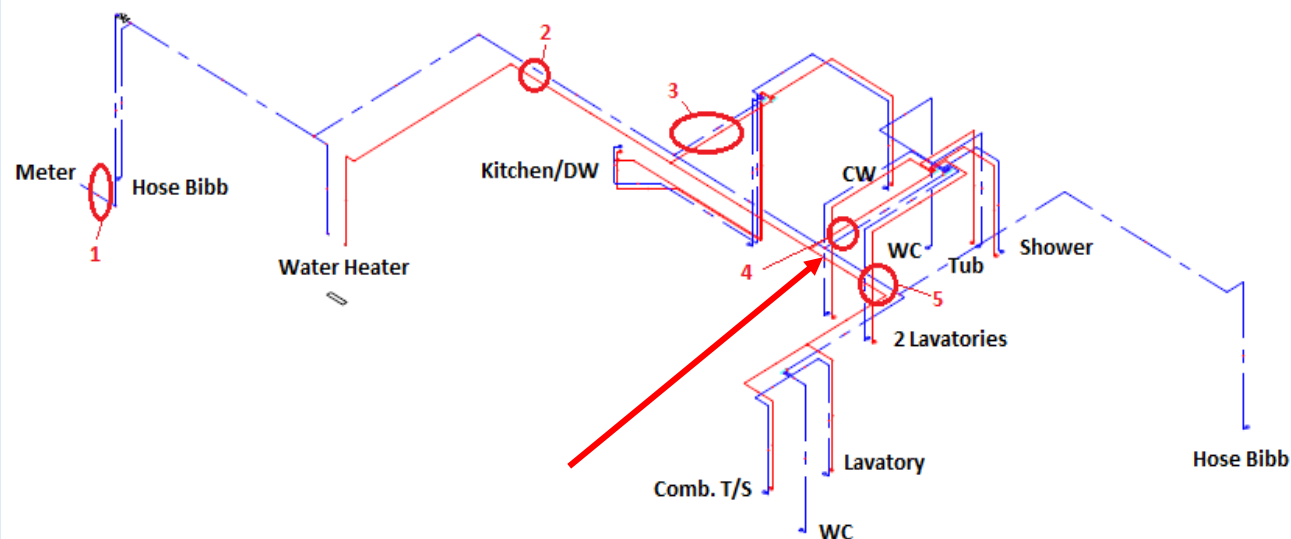
	[A] FIXTURE	[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	1.5	1.5
2	Bathtub	1	1.0	5.5	5.5
3	Bidet	0	1.0	2.0	2.0
4	Clothes Washer	0	5.5	3.5	3.5
5	Combination Bath/Shower	0	5.5	5.5	5.5
6	Dishwasher	0	0.5	1.3	1.3
7	Kitchen Faucet	0	2.0	2.2	2.2
8	Laundry Faucet	0	2.0	2.0	2.0
9	Lavatory Faucet	2	2.0	1.5	1.5
10	Shower, per head	1	4.5	2.0	2.0
11	Water Closet, 1.28 GPF Gravity Tank	1	1.0	3.0	3.0
12	Other Fixture 1	0	0.0	0.0	6.0
13	Other Fixture 2	0	0.0	0.0	6.0
14	Other Fixture 3	0	0.0	0.0	6.0

Total Number of Fixtures 5

99th PERCENTILE DEMAND FLOW = 7.5 GPM

RESET

RUN WATER
DEMAND
CALCULATOR



Pipe Section	Cold Demand (GPM)	Cold Pipe Size (Inches)	Hot Demand (GPM)	Hot Pipe Size (Inches)
1	$9.0 + 2.5 = 11.5$		-	
2	$9.0 + 2.5 = 11.5$		9.0	
3	3.5		4.8	
4	7.5		7.0	
5	$7.0 + 2.5 = 9.5$		5.5	

Cold Water Branch Estimate

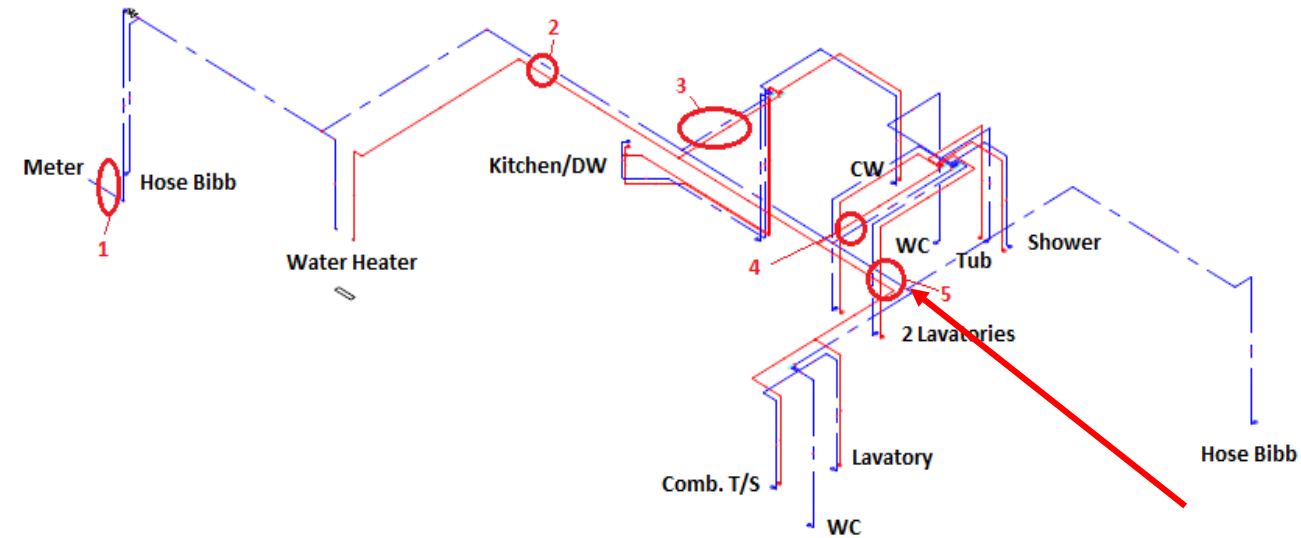
[A] FIXTURE	[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1 Bar Sink	0	2.0	1.5	1.5
2 Bathtub	0	1.0	5.5	5.5
3 Bidet	0	1.0	2.0	2.0
4 Clothes Washer	0	5.5	3.5	3.5
5 Combination Bath/Shower	1	5.5	5.5	5.5
6 Dishwasher	0	0.5	1.3	1.3
7 Kitchen Faucet	0	2.0	2.2	2.2
8 Laundry Faucet	0	2.0	2.0	2.0
9 Lavatory Faucet	1	2.0	1.5	1.5
10 Shower, per head	0	4.5	2.0	2.0
11 Water Closet, 1.28 GPF Gravity Tank	1	1.0	3.0	3.0
12 Other Fixture 1	0	0.0	0.0	6.0
13 Other Fixture 2	0	0.0	0.0	6.0
14 Other Fixture 3	0	0.0	0.0	6.0

Total Number of Fixtures 3

99th PERCENTILE DEMAND FLOW = **7.0** GPM

RESET

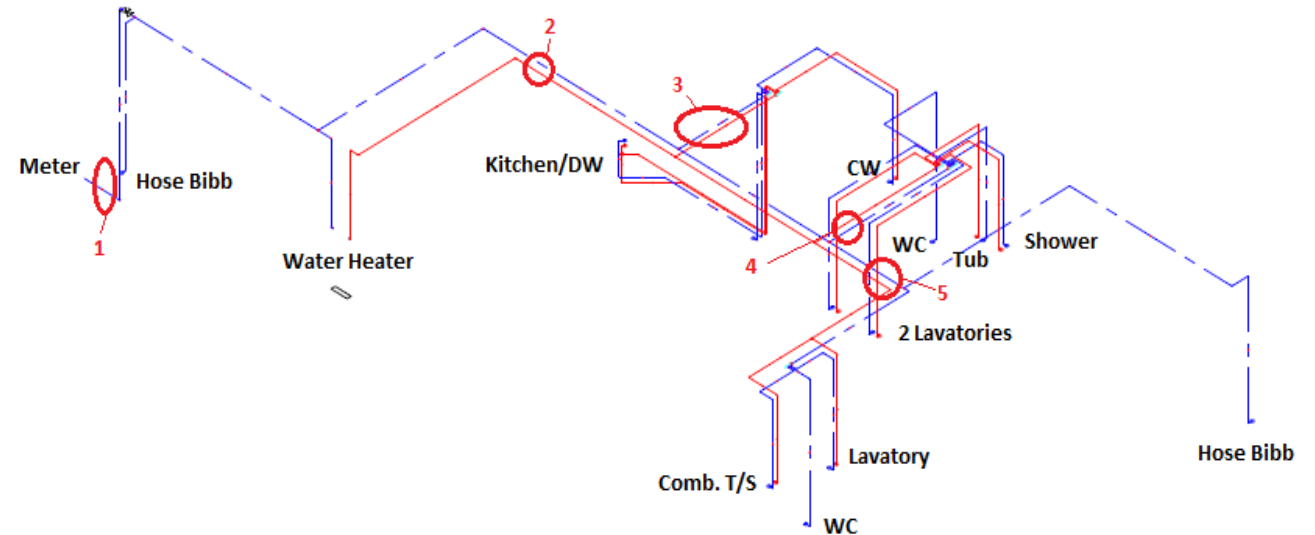
RUN WATER DEMAND CALCULATOR



4. Select Pipe Size

Pipe Section	Cold Demand (GPM)	Cold Pipe Size (Inches)	Hot Demand (GPM)	Hot Pipe Size (Inches)
1	9.0 + 2.5 = 11.5	1	-	-
2	9.0 + 2.5 = 11.5	1	9.0	1
3	3.5	1/2	4.8	3/4
4	7.5	3/4	7.0	3/4
5	7.0 + 2.5 = 9.5	3/4	5.5	3/4

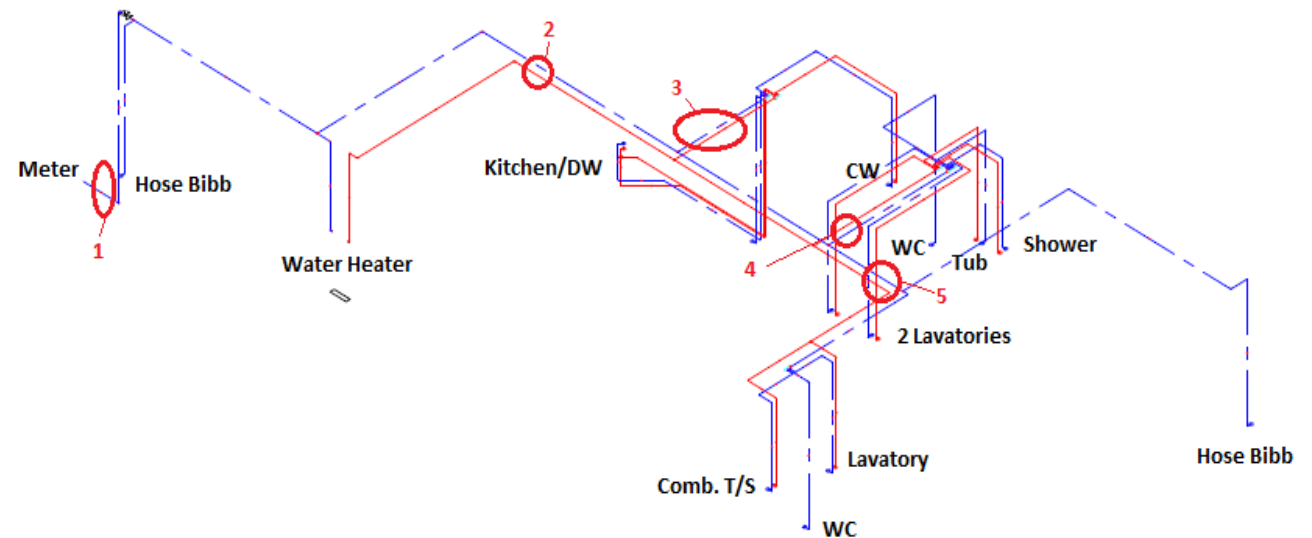
Diameter	Maximum Demand per Pipe Size	
	Max Cold Demand (gpm) @ 10ft/sec	Max Hot Demand (gpm) @ 8ft/sec
3/8 -inch	-	-
1/2 - inch	4.0	4.5
3/4-inch	10.0	8.6
1-inch	18.0	14.5
1 1/4- inch	30.0	22.5



Select Fixture Branch Pipe Size

Fixture Branch	GPM	Cold Pipe Size (Inches)	Hot Pipe Size (Inches)
Kitchen Faucet	2.2	1/2	1/2
Dishwasher	1.3	-	1/2
Clothes Washer	3.5	1/2	1/2
Lavatory Faucet	1.5	1/2	1/2
WC	3.0	1/2	-
Bathtub	5.5	3/4	3/4
Shower	2.0	1/2	1/2
Comb. T/S	5.5	3/4	3/4

Diameter	Maximum Demand per Pipe Size	
	Max Cold Demand (gpm) @ 10ft/sec	Max Hot Demand (gpm) @ 8ft/sec
3/8 -inch	-	-
1/2 - inch	4.0	4.5
3/4-inch	10.0	8.6
1-inch	18.0	14.5
1 1/4- inch	30.0	22.5



Comparing the WDC with Table 610.4 in UPC

Example: PEX System – 2 bath Building Supply

UPC – 27 FU

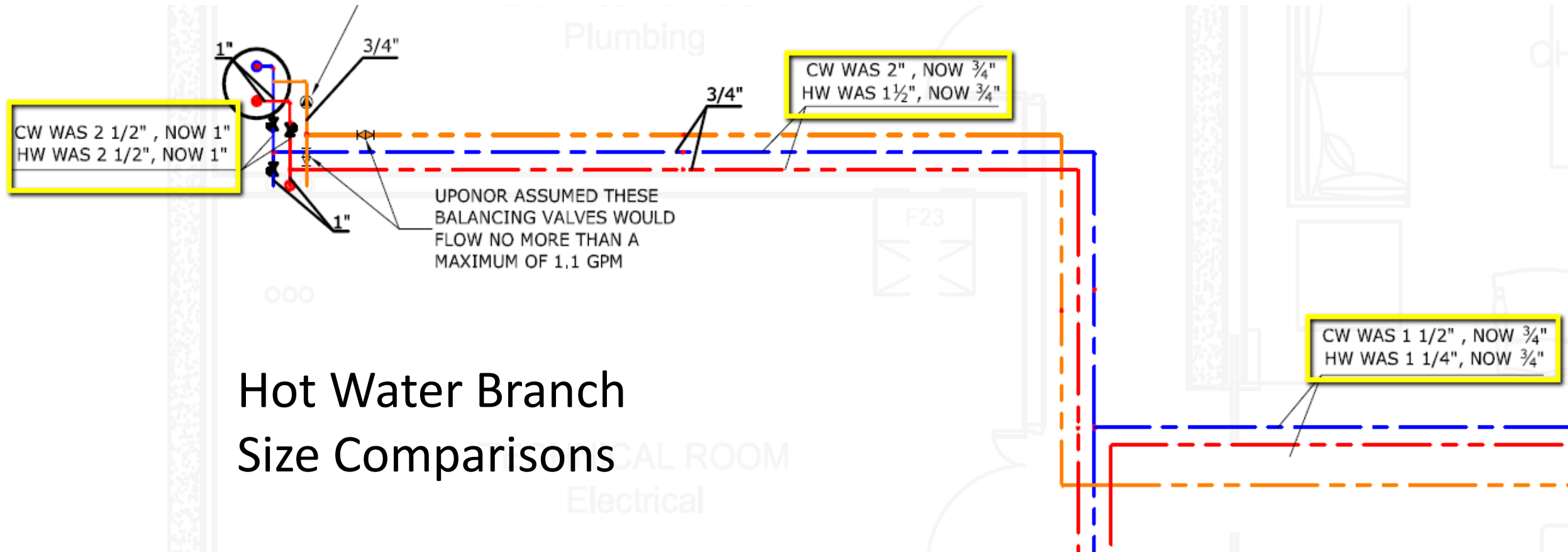
Building Supply at the meter – 1¼ -inch

WDC – 11.5gpm

Building Supply at the meter – 1-inch

One Pipe Size Reduction

Example 2: 15 – Bath Single Family Dwelling



The diagram illustrates a complex water distribution network with various pipe sizes (1/2", 3/4", 1", 1 1/4", 2 1/2") and flow rates. Key annotations include:

- Top Right:** "BASEMENT" label. Pipe sizes 3/4" and 1" are indicated. A yellow box states: "CW WAS 2 1/2", NOW 1" / HW WAS 2", NOW 1".
- Top Center:** "CW & HWR DN IN WALL TO BASEMENT / HW UP IN WALL FROM BASEMENT".
- Bottom Left:** A yellow box states: "CW WAS 1 1/4", NOW 3/4".
- Bottom Center:** A yellow box states: "CW WAS 1 1/4", NOW 3/4".
- Bottom Right:** A yellow box states: "WAS 2 1/2" @ 73.11 GPM, NOW 1" @ 12.0 GPM".
- Other Labels:** "LIVING ROOM", "DRESSING", "GUEST SUITE 4", "GUEST SUITE 3", "BATHROOM", "GUESTROOM", "UP IN WALL".

WAS 2 1/2" @ 73.11 GPM,
NOW 1" @ 12.0 GPM

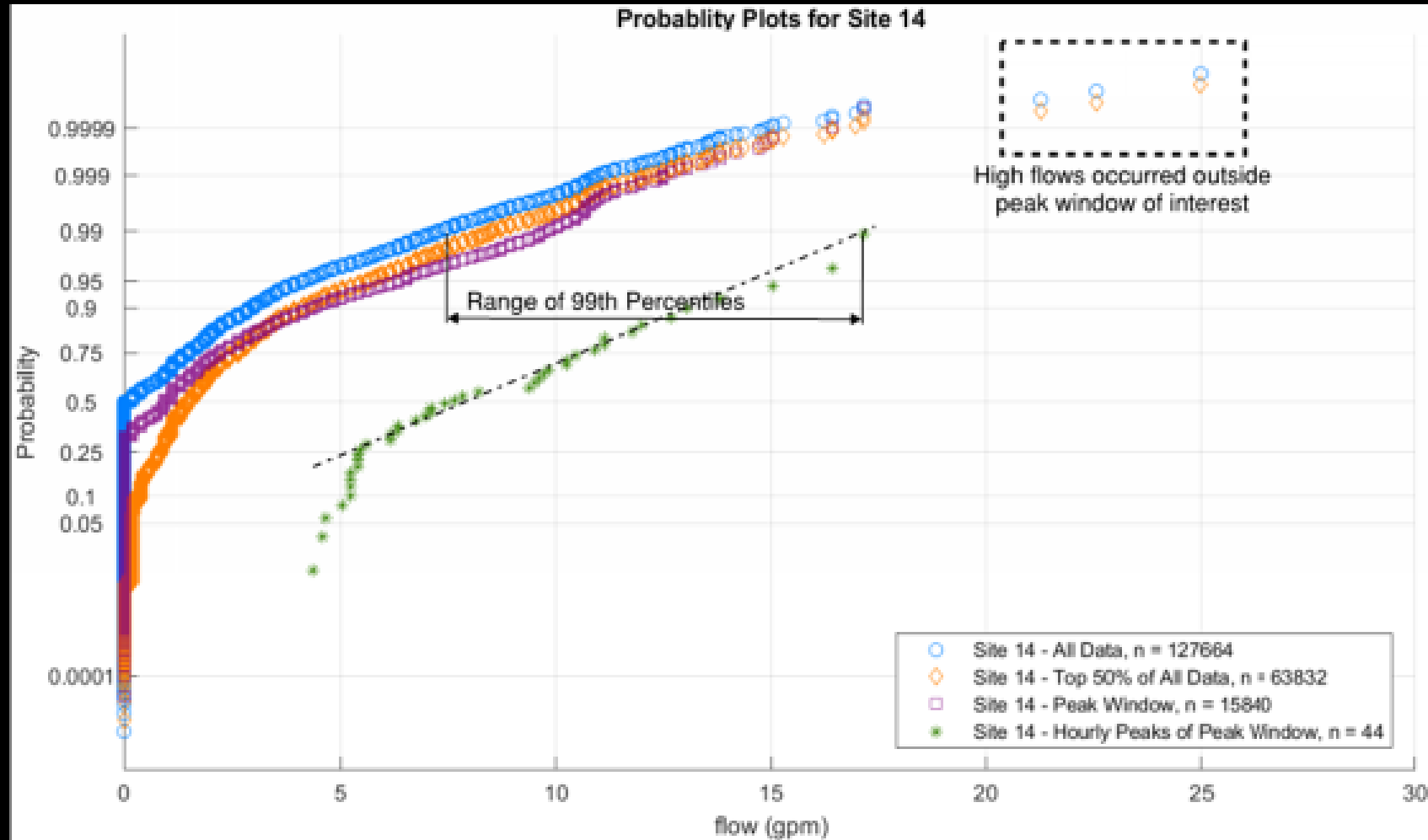
15-Bath Single Family Dwelling

Cost Savings and Pipe Size Reductions

15 Bath					
Overall Cost					
WDC	\$11,999.98		Savings	\$13,314.57	
UPC	\$25,314.55			53%	
Demand					
	WDC gpm	Pipe Size (in)		UPC gpm	Pipe size (in)
Building Supply	12.0	1		73.11	2 1/2
Total HW	11.5	1		55.03	2 1/2

Denver Multifamily Data – Peak Analysis

Applied the same peak analyses that from Site 07 (High School) to Site 14 (Multifamily)
Peak window build off of weekday use from 7:00 pm to 11:00 pm
Many of the same trends are visible



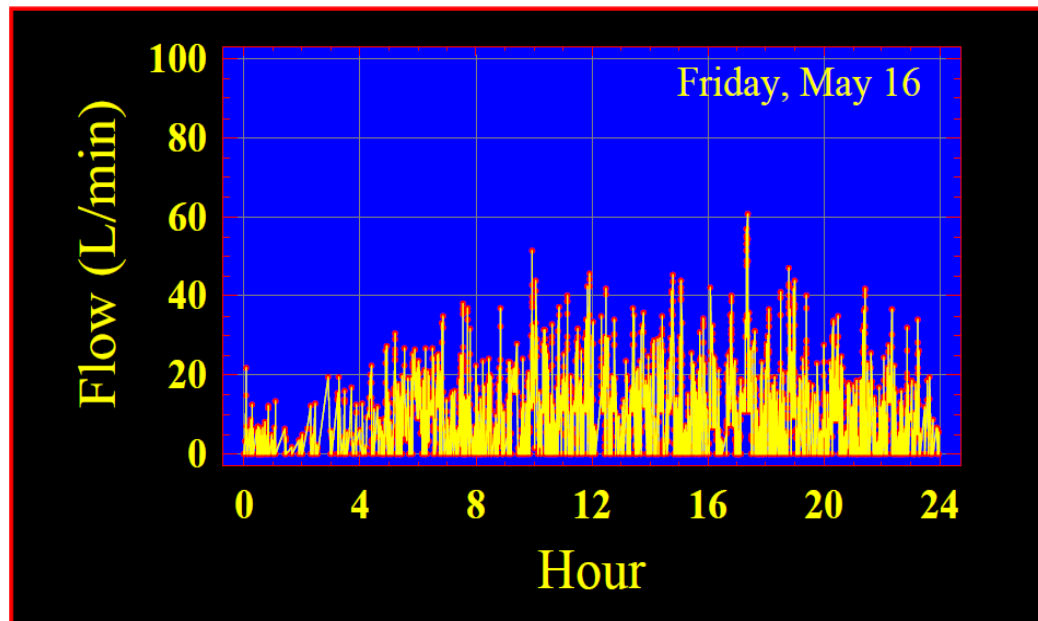
The Future: WDC App under Development



SYSTEM DATA	
Section:	
Pipe Material:	
Developed Length:	
WDC:	
CALCULATE	
RESULTS	
Minum Pipe Size:	
Adjusted Pipe Size:	
Velocity:	
Pressure Loss:	
DOCUMENT	

Commercial Application

What is needed?



End Use Data

Fixture Probabilities

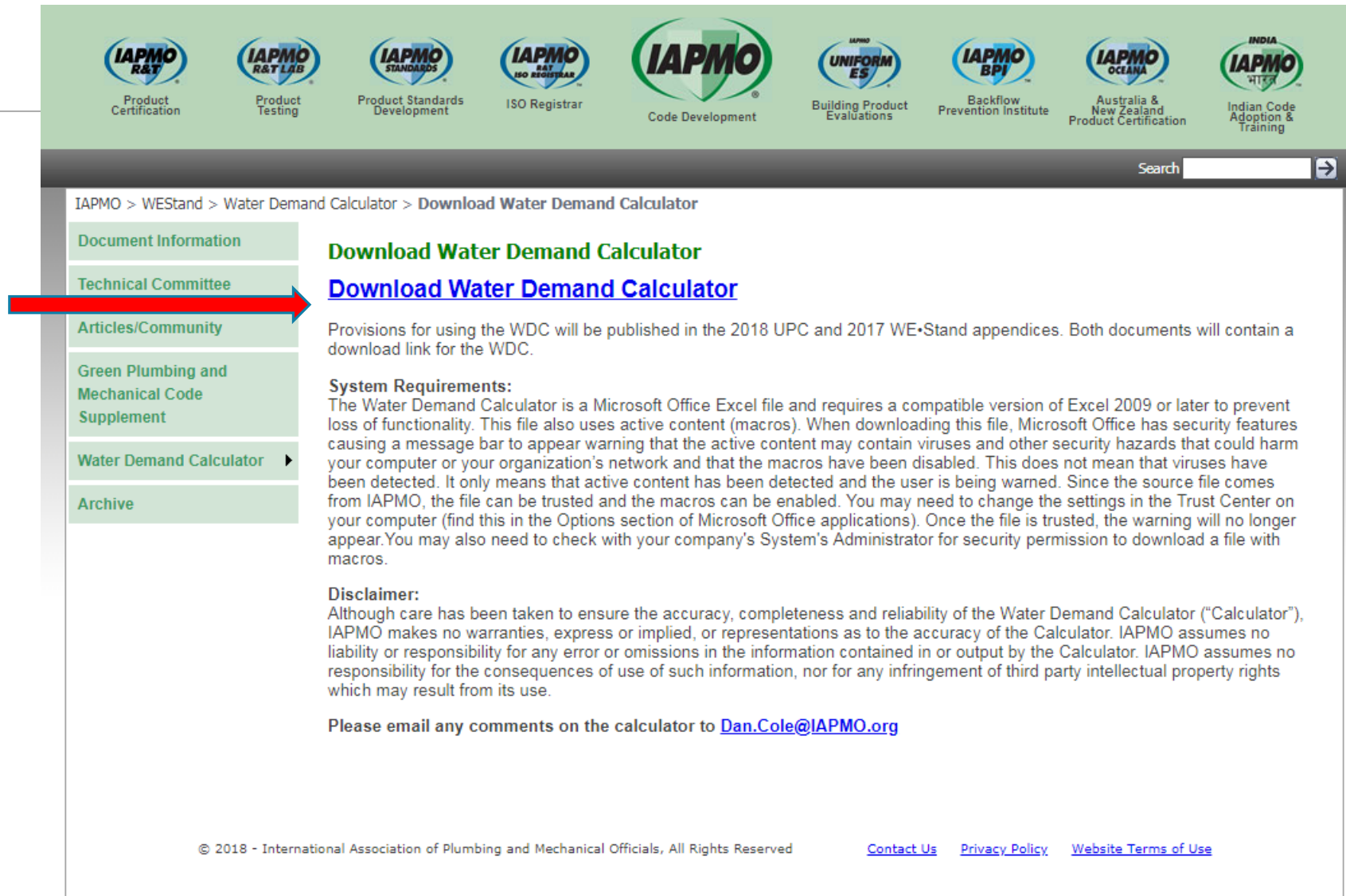
- Monitoring
- Data Loggers and Sensors

Target Building Types

- Office Buildings
- Schools
- Health Care Facilities
- Hotels

<http://www.iapmo.org/WESTAND/Pages/WaterDemandCalculator.aspx>

To Download
the Calculator



The screenshot displays the IAPMO website's 'Water Demand Calculator' page. The header features a navigation bar with logos for IAPMO R&T, IAPMO R&T LAB, IAPMO STANDARDS, IAPMO R&T ISO REGISTRAR, IAPMO (main logo), IAPMO UNIFORM ES, IAPMO BPI, IAPMO OCEANA, and IAPMO INDIA. Below the header is a search bar. The main content area is divided into a left sidebar and a right main panel. The sidebar contains links: Document Information, Technical Committee, Articles/Community, Green Plumbing and Mechanical Code Supplement, Water Demand Calculator (highlighted with a red arrow), and Archive. The main panel has the title 'Download Water Demand Calculator' and a sub-header 'Download Water Demand Calculator'. It includes a paragraph about provisions for using the WDC, a 'System Requirements' section explaining that the calculator is a Microsoft Office Excel file with macros, and a 'Disclaimer' section. At the bottom, it provides an email address for comments: Dan.Cole@IAPMO.org. The footer contains copyright information and links for Contact Us, Privacy Policy, and Website Terms of Use.

IAPMO > WESTand > Water Demand Calculator > Download Water Demand Calculator

Download Water Demand Calculator

[Download Water Demand Calculator](#)

Provisions for using the WDC will be published in the 2018 UPC and 2017 WE•Stand appendices. Both documents will contain a download link for the WDC.

System Requirements:
The Water Demand Calculator is a Microsoft Office Excel file and requires a compatible version of Excel 2009 or later to prevent loss of functionality. This file also uses active content (macros). When downloading this file, Microsoft Office has security features causing a message bar to appear warning that the active content may contain viruses and other security hazards that could harm your computer or your organization's network and that the macros have been disabled. This does not mean that viruses have been detected. It only means that active content has been detected and the user is being warned. Since the source file comes from IAPMO, the file can be trusted and the macros can be enabled. You may need to change the settings in the Trust Center on your computer (find this in the Options section of Microsoft Office applications). Once the file is trusted, the warning will no longer appear. You may also need to check with your company's System's Administrator for security permission to download a file with macros.

Disclaimer:
Although care has been taken to ensure the accuracy, completeness and reliability of the Water Demand Calculator ("Calculator"), IAPMO makes no warranties, express or implied, or representations as to the accuracy of the Calculator. IAPMO assumes no liability or responsibility for any error or omissions in the information contained in or output by the Calculator. IAPMO assumes no responsibility for the consequences of use of such information, nor for any infringement of third party intellectual property rights which may result from its use.

Please email any comments on the calculator to Dan.Cole@IAPMO.org

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